Access DB# 60056

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: My-Chau TRAN Examiner #: 78933 Date: 2/11/02
Art Unit: 1641 Phone Number 305-6999 Serial Number: 09/827,076
Mail Box and Bldg/Room Location: CM1, 8A16 Results Format Preferred (circle): PAPER DISK E-MAIL
7E12

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Two-dimensional spectral imaging system

Inventors (please provide full names): Stephen A. Empedocles and Andrew R. Watson

Earliest Priority Filing Date: 4/6/2000

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please perform: ① Inventors search
② The following claims below. (#1 & 20)

Thank-you.

RECEIVED
FEB 11 2002
GROUP 1600

****

14-21
+2

STAFF USE ONLY Point of Contact: Alex Waclawiw Technical Info. Specialist CM1 1201+ Tel: 308-4401

	Type of Search	Vendors and cost where applicable
Searcher:	NA Sequence (#)	STN $
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#)	Questel/Orbit
Date Searcher Picked Up: 2-14-02	Bibliographic ✓	Dr.Link
Date Completed: 2-14-02	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 8	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time:	Other	Other (specify)

PTO-1590 (8-01)

Inventor Search

Tran 09/827,076

```
$

=> fil wpids hcaplus
FILE 'WPIDS' ENTERED AT 12:45:30 ON 14 FEB 2002
COPYRIGHT (C) 2002 DERWENT INFORMATION LTD

FILE 'HCAPLUS' ENTERED AT 12:45:30 ON 14 FEB 2002
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

=> d que
L1            31 SEA ("EMPEDOCLES S"/AU OR "EMPEDOCLES S A"/AU OR "EMPEDOCLES
                  STEPHEN"/AU OR "EMPEDOCLES STEPHEN A"/AU OR "EMPEDOCLES
                  STEPHEN ALEXANDER"/AU)
L2           159 SEA "WATSON A"/AU OR "WATSON A R"/AU
L3           107 SEA "WATSON ANDREW"/AU OR ("WATSON ANDREW R"/AU OR "WATSON
                  ANDREW ROBERT"/AU)
L4           292 SEA (L1 OR L2 OR L3)
L5       1194368 SEA SPECTR?
L6            29 SEA L4 AND L5
L7       1236685 SEA LABEL? OR EXCITAT? OR SENSOR# OR DETECTOR# OR DIFFRAC?
L8            12 SEA L6 AND L7
L9            10 DUP REM L8 (2 DUPLICATES REMOVED)

=> d bib ab 1-10

L9   ANSWER 1 OF 10  WPIDS COPYRIGHT 2002   DERWENT INFORMATION LTD  DUPLICATE
     1
AN   2002-017473 [02]   WPIDS
DNN  N2002-013962       DNC C2002-005000
TI   Spectral label identification comprises spatially
     restraining first spectrally labeled body, generating
     spectrum from the body, dispersing spectrum across
     sensor surface, and identifying the body from dispersed
     spectrum.
DC   B04 D16 S02 S03
IN   EMPEDOCLES, S A; JIN, J; WATSON, A R
PA   (EMPE-I) EMPEDOCLES S A; (JINJ-I) JIN J; (WATS-I) WATSON A R; (QUAN-N)
     QUANTUM DOT CORP
CYC  95
PI   WO 2001077391 A1 20011018 (200202)* EN   52p
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
            NL OA PT SD SE SL SZ TR TZ UG ZW
         W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
            DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ
            LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD
            SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
     US 2002008148 A1 20020124 (200210)
ADT  WO 2001077391 A1 WO 2001-US11391 20010406; US 2002008148 A1 Provisional US
     2000-195520P 20000406, US 2001-827256 20010405
PRAI US 2000-195520P  20000406; US 2001-827256   20010405
AB   WO 200177391 A UPAB: 20020109
     NOVELTY - Spectral label identification, comprising
     spatially restraining a spectrally labeled body,
     generating a spectrum from the body while the body is spatially
     restrained, dispersing the spectrum from the body across a
     sensor surface, and identifying the body from the dispersed
     spectrum, is new.
```

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a multiplexed assay system comprising a support structure having an array of sites, bodies, each having a **label** for generating an identifiable **spectrum** in response to **excitation** energy, and optical train imaging sites on a **sensor** surface. The optical train comprises a wavelength dispersive element.

USE - For detecting and/or identifying **spectrally labeled** bodies for performing multiplexed assays.

ADVANTAGE - The method allows detecting and/or identification of large numbers of **spectral** codes and/or signals in a repeatedly, highly time efficient manner, while providing improved flexibility, ease of use, and rare event/condition detection, and/or accuracy.

DESCRIPTION OF DRAWING(S) - The drawing shows an imaging system and high-throughput assay method.

Excitation energy 22.

Dwg.1/12

L9 ANSWER 2 OF 10 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD DUPLICATE 2

AN 2001-557654 [62] WPIDS

DNN N2001-414409 DNC C2001-165825

TI Detection of target species, e.g. nucleic acids, involves detecting fluorescence emitted by quantum dot attached to single copy of target species bound to affinity group.

DC B04 D16 S03

IN **EMPEDOCLES, S A; WATSON, A R**

PA (QUAN-N) QUANTUM DOT CORP

CYC 94

PI WO 2001061348 A1 20010823 (200162)* EN 79p

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

AU 2001038447 A 20010827 (200176)

ADT WO 2001061348 A1 WO 2001-US5164 20010216; AU 2001038447 A AU 2001-38447 20010216

FDT AU 2001038447 A Based on WO 200161348

PRAI US 2000-182844P 20000216

AB WO 200161348 A UPAB: 20011026

NOVELTY - Detecting (M1) a target species immobilized on a substrate comprises detecting a single copy of the target species by detecting fluorescence emitted by a quantum dot attached to the single copy. The single copy is bound to an affinity group for the target species immobilized on the substrate.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a data set acquired by M1;

(2) a computer disc storing information comprising a set of data acquired by M1;

(3) a database in a searchable format comprising two or more data sets; and

(4) a method for determining whether a target species within a region of interest on a substrate is quantifiable by a technique selected from single target counting and ensemble counting, comprising:

(a) probing the region of interest to determine target species density within the region of interest by detecting fluorescence emitted by a quantum dot attached to one or more molecules of the target species bound to an affinity moiety for the target species immobilized on the

substrate; and

(b) comparing the density to a predetermined density cutoff value above which ensemble counting is used and below which single target counting is used.

(5) a method of detecting a target species in solution, comprising detecting a single copy of the target species by detecting essentially simultaneously fluoresence emitted by a first quantum dot of as first color attached to the single copy and a second quantum dot of a second color attached to the single copy, where the first color and the second color are distinguishably different colors;

(6) a method of detecting a target species immobilized on a substrate, which species is a member of a population of target species immobilized on the substrate with spacing between each member of the population, comprising detecting a single copy of the target species by detecting fluorescence emitted by a quantum dot attached to the single copy, where the single copy is bound to an affinity moiety for the target species immobilized on the substrate, where the detecting is performed with a detecting means having a resolution that is higher than the spacing between each member of the population;

(7) a method of detecting a target species immobilized on a substrate, where the species is a member of a population of target species immobilized on the substrate, comprising detecting a single copy of the target species by detecting fluorescence emitted by a quantum dot attached to the single copy, where the single copy is bound to an affinity moiety for the target species immobilized on the substrate forming a target-affinity moiety complex, and the detecting is performed with a detecting means having a resolution limited region of interest such that, in general, less than one target- affinity moiety complex is present within each resolution limited region of interest;

(8) a method of detecting a first target species immobilized on a substrate, where the species is a member of a population of target species immobilized on the substrate, comprising:

(a) defining a first region of interest of the substrate;

(b) probing the first region of interest for fluorescence emitted by a quantum dot attached to a single copy of the first target species bound to an affinity moiety for the first target species immobilized on the substrate, where the probing resolves the fluorescence from the first target species from fluorescence arising from other members of the population of target species immobilized on the substrate; and

(9) a method for detecting multiple target species immobilized on a substrate, where the species are members of a population of target species immobilized on the substrate, comprising:

(a) defining multiple regions of interest on the substrate; and

(b) probing the multiple regions of interest for fluorescence emitted by a quantum dot attached to a single copy of the target species bound to an affinity moiety for the target species immobilized within a region of interest of the substrate, where the probing resolves fluorescence from the multiple target species from other members of the population and from each other.

USE - The method detects target species, e.g. nucleic acids, polypeptides, small organic bioactive agents (e.g., drugs, agents of war, herbicides, pesticides), and organisms. It is useful in performing assays, e.g. immunoassays, competitive assays, nucleic acid binding assays, or sandwich assays, and in screening libraries of compounds, e.g. combinatorial libraries.

ADVANTAGE - The method has increased sensitivity, specificity, and dynamic range of assay detection.

Dwg.0/11

L9 ANSWER 3 OF 10 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2002-010605 [01] WPIDS
CR 2001-602793 [63]
DNN N2002-008860 DNC C2002-002575
TI Encoded bead conjugate comprising a probe and a **spectral** code comprising a semiconductor nanocrystal, useful when assaying a sample for a target polynucleotide and therefore in pharmacogenetic testing and forensics.
DC B04 D16 L03 S03
IN BRUCHEZ, M P; LAI, J H; PHILLIPS, V E; **WATSON, A R**; WONG, E Y
PA (QUAN-N) QUANTUM DOT CORP
CYC 95
PI WO 2001071044 A1 20010927 (200201)* EN 91p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001049386 A 20011003 (200210)
ADT WO 2001071044 A1 WO 2001-US9351 20010322; AU 2001049386 A AU 2001-49386 20010322
FDT AU 2001049386 A Based on WO 200171044
PRAI US 2000-237000P 20000929; US 2000-191227P 20000322
AB WO 200171044 A UPAB: 20020213
NOVELTY - An encoded bead conjugate (I) comprising a microsphere comprising a **spectral** code comprising a first semiconductor nanocrystal having first fluorescence characteristics, and a first polynucleotide having a proximal end and at least one distal end, where the first polynucleotide is linked to the microsphere at the proximal end, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a method (M1) of assaying for a first target polynucleotide in a sample, comprising:

(a) contacting the sample suspected of containing the first target polynucleotide with the (I) under a first set of hybridization conditions in which the first polynucleotide can hybridize to the first target polynucleotide, where a change in fluorescence characteristics of the conjugate results upon hybridization of the first target polynucleotide to the first polynucleotide; and

(b) identifying the (I) by its **spectral** code; and determining if a change in fluorescence characteristics of the conjugate has resulted from the hybridization;

(2) a kit comprising:

(a) a first (I) comprising a microsphere comprising a **spectral** code comprising a first semiconductor nanocrystal having first fluorescence characteristics and a first polynucleotide having a proximal end and at least one distal end where the first polynucleotide is linked to the microsphere at the proximal end;

(b) a housing for retaining the encoded bead conjugate; and

(c) instructions provided with the housing that describe how to use the components of the kit to assay a sample for a target polynucleotide.

USE - The encoded bead conjugate is used in nucleic based assay methods .The methods are useful in pharmacogenetic testing, forensics, paternity testing and in screening for hereditary disorders. The methods are also useful for studying alterations of gene expression in response to a stimulus. Other applications include human population genetics, analyses of human evolutionary history, and characterization of human haplotype diversity. The methods can also be used to detect immunoglobulin class switching and hypervariable mutation of immunoglobulins, to detect

polynucleotide sequences from contaminants or pathogens including bacteria, yeast and viruses, for HIV subtyping to determine the particular strains or relative amounts of particular strains infecting an individual and to detect single nucleotide polymorphisms, which may be associated with particular alleles or subsets of alleles.

The methods are also useful for mini-sequencing, and for detection mutations, including single nucleotide polymorphisms (SNPs), insertions, deletions, transitions, transversions, inversions, frame shifts, triplet repeat expansion, and chromosome rearrangements. The methods can be used to detect nucleotide sequences associated with increased risk of diseases or disorders, including cystic fibrosis, Tay-Sachs, sickle-cell anemia, etc.

Dwg.0/15

L9 ANSWER 4 OF 10 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-602793 [68] WPIDS
CR 2002-010605 [63]
DNN N2001-449773 DNC C2001-178619
TI Assaying a sample for a target polynucleotide or an amplification product using an encoded bead conjugate comprising a probe and a **spectral** code comprising a semiconductor nanocrystal, useful in pharmacogenetic testing and forensics.
DC B04 D16 L03 S03
IN BRUCHEZ, M P; LAI, J H; PHILLIPS, V E; **WATSON, A R**; WONG, E Y
PA (QUAN-N) QUANTUM DOT CORP
CYC 94
PI WO 2001071043 A1 20010927 (200168)* EN 88p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001050937 A 20011003 (200210)
ADT WO 2001071043 A1 WO 2001-US9242 20010322; AU 2001050937 A AU 2001-50937 20010322
FDT AU 2001050937 A Based on WO 200171043
PRAI US 2000-237000P 20000929; US 2000-191227P 20000322
AB WO 200171043 A UPAB: 20020213
NOVELTY - A new method (M1) for assaying a sample for a target polynucleotide or an amplification product by contacting the sample with an encoded bead conjugate comprising a probe and a **spectral** code comprising a semiconductor nanocrystal. The binding between the probe and target polynucleotide results in a change in fluorescence characteristics of the bead which is measured.

DETAILED DESCRIPTION - A new method (M1) for assaying a sample for a target polynucleotide or an amplification product by contacting the sample with an encoded bead conjugate comprising a probe and a **spectral** code comprising a semiconductor nanocrystal. The binding between the probe and target polynucleotide results in a change in fluorescence characteristics of the bead which is measured.

In detail M1, comprises contacting the sample with an unlabelled probe polynucleotide attached to a substrate. The sample is suspected of containing the amplification product, and the amplification product comprises a first **label** and a capture sequence. The probe polynucleotide comprises first and second complementary regions and a third region located between the first and second complementary regions, The probe polynucleotide can form a stem-loop structure in which the first and second complementary regions hybridize to each other to form a stem and the third region forms a loop. At least a part of the third region is

complementary to at least a part of the capture sequence, and the probe polynucleotide can preferentially hybridize to the amplification product and therefore disrupt formation of the stem-loop structure under at least one set of hybridization conditions. The method then determines if the first **label** is associated with the substrate to determine if the amplification product is present in the sample.

INDEPENDENT CLAIMS are included for the following:

(1) an amplification product assay complex comprising a substrate comprising an unlabelled probe polynucleotide hybridized to an amplification product from a target polynucleotide, where the amplification product comprises a capture sequence and a **label**, where the probe polynucleotide comprises first and second complementary regions and a third region located between the first and second complementary regions, and further where the probe polynucleotide can form a stem-loop structure in which the first and second complementary regions hybridize to each other to form a stem and the third region forms a loop, where at least a part of the third region is hybridized to at least a part of the capture sequence, and where the stem-loop structure is not formed as a result of the probe polynucleotide being hybridized to the amplification product;

(2) a method of forming an amplification product assay complex;

(3) an amplification product assay array (A1);

(4) a kit comprising:

(a) a substrate attached to an unlabeled probe polynucleotide comprising first and second complementary regions and a third region located between the first and second complementary regions, where the probe polynucleotide can form a stem-loop structure in which the first and second complementary regions hybridize to each other to form a stem and the third region forms a loop, where at least a part of the third region is complementary to at least a part of a capture sequence of an amplification product from a target polynucleotide, where the unlabeled probe polynucleotide can preferentially hybridize to the amplification product and thereby disrupt formation of the stem-loop structure under at least one set of hybridization conditions;

(b) a reagent for incorporating a **label** into the amplification product;

(c) a housing for retaining the substrate and the reagent; and

(d) instructions provided with the housing that describe how to use the components of the kit to assay a sample for the amplification product; and

(5) an article of manufacture, comprising a substrate attached to an unlabeled probe polynucleotide, where the probe comprises first and second complementary regions and a third region located between the first and second complementary regions, and the probe can form a stem-loop structure in which the first and second complementary regions hybridize to each other to form a stem and the third region forms a loop.

USE - The methods are useful in pharmacogenetic testing, forensics, paternity testing and in screening for hereditary disorders. The methods are also useful for studying alterations of gene expression in response to a stimulus. Other applications include human population genetics, analyses of human evolutionary history, and characterization of human haplotype diversity. The methods can also be used to detect immunoglobulin class switching and hypervariable mutation of immunoglobulins, to detect polynucleotide sequences from contaminants or pathogens including bacteria, yeast and viruses, for HIV subtyping to determine the particular strains or relative amounts of particular strains infecting an individual and to detect single nucleotide polymorphisms, which may be associated with particular alleles or subsets of alleles.

The methods are also useful for mini-sequencing, and for detection mutations, including single nucleotide polymorphisms (SNPs), insertions,

deletions, transitions, transversions, inversions, frame shifts, triplet repeat expansion, and chromosome rearrangements. The methods can be used to detect nucleotide sequences associated with increased risk of diseases or disorders, including cystic fibrosis, Tay-Sachs, sickle-cell anemia, etc.

ADVANTAGE - The methods are useful in multiple settings where different conjugates were used to assay for different target polynucleotides. The large number of distinguishable semiconductor nanocrystal **labels** allows for the simultaneous analysis of multiple **labeled** target polynucleotides, along with multiple different encoded bead conjugates.

The assay can be implemented in a homogenous format. This allows for higher assay throughput due to fewer manipulations of the sample and decreased cross-contamination resulting in more reliable assays and less downtime from cross-contamination.

Dwg.0/15

L9 ANSWER 5 OF 10 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-557572 [62] WPIDS
DNN N2001-414357 DNC C2001-165779
TI Test strip, for determining the amount of an analyte, comprises chromatographic medium, semiconductor nanocrystals as a detectable **label**, and immobilized control and capture ligands.
DC A89 B04 D16 S03
IN DANIELS, R H; **WATSON, A R**
PA (QUAN-N) QUANTUM DOT CORP; (DANI-I) DANIELS R H; (WATS-I) WATSON A R
CYC 94
PI WO 2001057522 A2 20010809 (200162)* EN 64p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
AU 2001037981 A 20010814 (200173)
US 2002004246 A1 20020110 (200208)
ADT WO 2001057522 A2 WO 2001-US2846 20010129; AU 2001037981 A AU 2001-37981 20010129; US 2002004246 A1 Provisional US 2000-180811P 20000207, US 2000-750223 20001227
FDT AU 2001037981 A Based on WO 200157522
PRAI US 2000-750223 20001227; US 2000-180811P 20000207
AB WO 200157522 A UPAB: 20011026
NOVELTY - A test strip (I) for determining the presence and/or amount of an analyte in a test sample, comprising a chromatographic medium (CM), a sample reservoir (SR) comprising semiconductor nanocrystals on CM for receiving the test sample, a capture reagent (CR) immobilized on CM, and a control ligand (CL) immobilized on CM, is new.

DETAILED DESCRIPTION - The sample reservoir comprises:

(i) a detection reagent comprising a detection ligand capable of selectively binding a target moiety of the analyte, where the detection ligand is conjugated with a semiconductor nanocrystal which emits light of a characteristic emission peak when exposed to a selected **excitation** wavelength, and where binding of the detection ligand to the target moiety forms a detection complex; or

(ii) a detection reagent comprising a detection ligand capable of selectively binding a target moiety of the analyte, where the detection ligand is conjugated with a semiconductor nanocrystal which emits light of a characteristic emission peak when exposed to a selected **excitation** wavelength, and another detection reagent comprising another detection reagent comprising another detection ligand capable of

selectively binding another target moiety and a capture ligand, where binding of the detection ligands to the moieties forms a detection complex.

CR is immobilized in a capture region which is not the SR, where in the case of (i), CR comprises a capture ligand which can selectively bind a detection complex to immobilize it, and in the case of (ii), CR comprises a capture ligand which can selectively bind the second detection ligand to form an immobilized capture complex. CL is immobilized in a control region which is not the SR nor the capture region, where in the case of (i), CL is capable of selectively binding the detection ligand to form an immobilized control complex, and in the case of (ii), CL is capable of selectively binding the first detection ligand not bound to the target moiety to form an immobilized control complex.

An INDEPENDENT CLAIM is also included determining the presence and/or amount of an analyte of interest in a sample, comprising applying the test sample to (I), and exposing the test strip to light of a selected wavelength, where production of light at a characteristic emission peak in both the capture and control regions indicates presence of the analyte.

USE - (I) is used to determine the presence and/or amount of an analyte of interest in a sample (claimed).

ADVANTAGE - The invented test strips make use of semiconductor nanocrystals and microspheres dyed with semiconductor nanocrystals. Semiconductor nanocrystals can have characteristic **spectral** emissions which can be tuned to a desired energy. A population of semiconductor nanocrystals can be manipulated to have line widths of 25 - 30 nm, allowing detection of one or more moieties in a single reaction. They yield high resolution results. The wide range of **excitation** wavelengths allowing use of a single energy source to effect simultaneous **excitation** of all populations of semiconductor nanocrystals in a system with distinct emission **spectra**. Semiconductor nanocrystals are more robust than conventional organic fluorescent dyes. The test strips are simple, user-friendly and obtain easily interpreted results rapidly. The tests are stable in a variety of climates and are relatively easy and inexpensive to make. Prior art used Metal Sol particles as detectable **labels** but these yield only semi-quantitative results after incubation periods of an hour or overnight. Use of colloidal particles have also been used although they are highly susceptible to aggregation. There are chemical or physical limitations to the use of fluorescent dyes e.g. the variation of **excitation** wavelengths when using different dyes requires multiple **excitation** light sources, prolonged or repeated exposure to **excitation** light leads to deterioration of fluorescence intensity, the degradation products of the dyes are organic compounds which may interfere with the biological processes being examined, **spectral** overlap exists from one dye to another, some low molecular weight dyes do not produce bright enough fluorescence.

DESCRIPTION OF DRAWING(S) - The diagram provides a schematic of a direct-type sandwich assay test strip employing semiconductor nanocrystals as the detectable **label**.

Dwg.1/4

L9 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:816979 HCAPLUS
DN 135:353731
TI Methods and compositions for polynucleotide analysis using generic capture sequences
IN Lai, Jennifer H.; Phillips, Vince E.; **Watson, Andrew R.**
PA Quantum Dot Corporation, USA
SO PCT Int. Appl., 85 pp.
CODEN: PIXXD2

DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001083823	A1	20011108	WO 2001-US13979	20010430

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 2000-200635 P 20000428

AB Methods, compns. and articles of manuf. for assaying a sample for an amplification product from a target polynucleotide are provided. An amplification reaction is used to produce the amplification product from the target polynucleotide so that it can be used to indirectly assay the sample for the target polynucleotide. A sample suspected of contg. the target polynucleotide is contacted with first and second primers to amplify the target polynucleotide; the first primer comprises a tag sequence, the complement of which is formed on the opposite strand during amplification and is referred to as a capture sequence. That opposite strand is referred to as a second primer extension product or an amplification product, and comprises a label. A capture probe is provided that is conjugated to a substrate and can bind to the capture sequence to form an amplification product detection complex. Methods of detecting the amplification product thus produced are also provided, as are amplification product assay arrays, along with methods of forming the same. The methods are particularly useful in multiplex settings where a plurality of target polynucleotides are to be assayed. Kits comprising reagents for performing such methods are also provided.

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:763317 HCAPLUS
DN 135:312861
TI Two-dimensional **spectral** imaging system
IN **Empedocles, Stephen A.; Watson, Andrew R.**
PA Quantum Dot Corporation, USA
SO PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001077678	A1	20011018	WO 2001-US11320	20010406

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 2000-195520 P 20000406
AB Improved devices, systems, and methods for sensing and/or identifying signals from within a signal detection region are well-suited for identification of spectral codes. Large nos. of independently identifiable spectral codes can be generated by quite small bodies, and a plurality of such bodies or probes may be present within a detection region. Simultaneously imaging of identifiable spectra from throughout the detection region allows the probes to be identified. As the identifiable spectra can be treated as being generated from a point source within a much larger detection field, a prism, diffractive grading, holog. transmissive grading, or the like can spectrally disperse the images of the labels across a sensor surface. A CCD can identify the relative wavelengths of signals making up the spectra. Abs. signal wavelengths may be detd. by detg. positions of the labels, by an internal wavelength ref. within the spectra, or the like.
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 8 OF 10 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-061110 [07] WPIDS
DNN N2001-045843 DNC C2001-016834
TI Detection of analytes using semi-conductor nanocrystals which are more robust than organic fluorescent dyes and which can be made to have characteristic **spectral** emissions.
DC B04 D13 D14 D16 J04 S03
IN BRUCHEZ, M P; DANIELS, R H; **EMPEDOCLES, S A**; PHILLIPS, V E; WONG, E Y; ZEHNDER, D A; PHILLIPS, V A
PA (QUAN-N) QUANTUM DOT CORP; (DANI-I) DANIELS R H; (EMPE-I) EMPEDOCLES S A; (PHIL-I) PHILLIPS V E; (WONG-I) WONG E Y
CYC 92
PI WO 2000068692 A1 20001116 (200107)* EN 72p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000047012 A 20001121 (200112)
US 6274323 B1 20010814 (200148)
US 2001034034 A1 20011025 (200170)
US 2001055764 A1 20011227 (200206)
ADT WO 2000068692 A1 WO 2000-US12227 20000505; AU 2000047012 A AU 2000-47012 20000505; US 6274323 B1 Provisional US 1999-133084P 19990507, US 2000-566014 20000505; US 2001034034 A1 Provisional US 1999-133084P 19990507, Cont of US 2000-566014 20000505, US 2001-887914 20010621; US 2001055764 A1 Provisional US 1999-133084P 19990507, Provisional US 2000-182845P 20000216, Provisional US 2000-266290P 20000929, US 2001-784645 20010215
FDT AU 2000047012 A Based on WO 200068692; US 2001034034 A1 Cont of US 6274323
PRAI US 1999-133084P 19990507; US 2000-566014 20000505; US 2001-887914 20010621; US 2000-182845P 20000216; US 2000-266290P 20000929; US 2001-784645 20010215
AB WO 200068692 A UPAB: 20010202
NOVELTY - Semiconductor nanocrystals (SN) used as detectable **labels** in assays for detecting target analytes (TA), are new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) detecting TA in a sample, comprising:
(a) providing the sample on a solid support;
(b) combining the sample with a SN conjugate under complex forming

conditions;
(c) removing unbound conjugate; and
(d) detecting the presence of the complex by monitoring **spectral** emissions mediated by the SN in the complex, which indicates the presence of TA;
(2) detecting TA in a sample, comprising:
(a) providing an unlabeled specific-binding molecule (SBM) on a solid support;
(b) combining the sample with the SBM under complex forming conditions;
(c) removing any unbound sample;
(d) combining the complex with a SN conjugate under complex forming conditions;
(e) removing unbound conjugate; and
(f) detecting the presence of the second complex by monitoring **spectral** emissions mediated by the SN in the complex, which indicates the presence of TA;
(3) detecting TA in a sample, comprising:
(a) providing the sample on a solid support;
(b) combining the sample with a SBM comprising a first member of a binding pair under complex forming conditions;
(c) removing unbound SBM;
(d) combining the complex with a second member of the binding pair under complex forming conditions; and
(e) detecting the presence of the second complex by monitoring **spectral** emissions mediated by the SN in the complex, which indicates the presence of TA;
(4) detecting TA in a sample, comprising:
(a) providing a complex comprising SBM to which a SN conjugate is bound, where SN has a characteristic **spectral** emission and where the conjugate specifically binds to the SBM;
(b) combining the sample with the complex under complex forming conditions; and
(c) detecting the presence of the second complex by monitoring **spectral** emissions mediated by the SN in the complex, which indicates the presence of TA;
USE - For detecting TAs e.g. nucleic acids or proteins (claimed) in biological fluids, biological solids, chromosomes, foodstuffs or environmental material.
ADVANTAGE - The range of **excitation** wavelengths of the nanocrystals is broad and can be higher in energy than the emission wavelengths of the nanocrystals. They are also more robust than conventional organic fluorescent dyes and are more resistant to photobleaching than organic dyes. This robustness removes the problems associated with contamination of the system due to degradation products of organic dyes. The emission **spectra** of the nanocrystals can be manipulated to have very narrow linewidths and lineshapes that are symmetric, gaussian or nearly gaussian with no tailing region.
Dwg.0/5

L9 ANSWER 9 OF 10 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-049760 [06] WPIDS
DNN N2001-038170 DNC C2001-013630
TI Use of the polarization of fluorescence emission as a means for determining the location or orientation of photoactive moieties, e.g., for determining the conformation of proteins or DNA.
DC B04 J04 S02 S03
IN BAWENDI, M; **EMPEDOCLES, S**
PA (MASI) MASSACHUSETTS INST TECHNOLOGY
CYC 20

PI WO 2000068669 A1 20001116 (200106)* EN 34p
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: CA JP
ADT WO 2000068669 A1 WO 2000-US12006 20000503
PRAI US 1999-310009 19990511
AB WO 200068669 A UPAB: 20010126
NOVELTY - Polarization **labels** are used to identify the location or three dimensional orientation of objects which absorb and emit light.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:
(A) determining the orientation of a photoactive moiety (PM) which exhibits an anisotropic transition dipole and which exhibits **spectral** emission polarized along at most two dimensions, comprising:
(i) exposing the PM to a light source, to stimulate a **spectral** emission; and
(ii) correlating the emission with the orientation of the PM;
(B) creating an aggregate of PMs, comprising:
(i) entrapping the PMs in a solid, within which the PMs exhibit an oriented transition dipole; and
(ii) photobleaching a portion of the PMs so that the aggregate will then exhibit polarized light emission in response to light absorption;
(C) locating or identifying an item of interest, comprising:
(i) providing an item of interest with which a particle which has a characteristic **spectral** emission is associated, where the **spectral** emission of the particle is characterized at least in part by polarization;
(ii) exposing the particle to an energy source to stimulate the **spectral** emission; and
(iii) correlating the **spectral** emission with the item of interest;
(D) providing an identification unit, comprising:
(i) selecting an item of interest;
(ii) providing an identifier which comprises at least one particle which has characteristic **spectral** emission; and
(iii) providing one or more reactive moieties (RMs) attached to the surface of the particle, where the RMs are selected for their ability to be compatible with the item of interest, and where the **spectral** emission of the particle is at least characterized by polarization;
(E) tracking the motion of an item of interest, comprising:
(i) providing an item of interest with which at least one particle (which has a characteristic **spectral** emission which is characterized at least in part by polarization) is associated;
(ii) exposing the particle to an energy source to stimulate the **spectral** emission;
(iii) correlating the **spectral** emission with the item of interest; and
(iv) repeating steps (i)-(iii) at known intervals;
(F) tracking the change in orientation of an item of interest, while the item is in motion, comprising:
(i) providing an item of interest with which at least one particle (which has a characteristic **spectral** emission which is characterized at least in part by polarization in two dimensions) is associated;
(ii) exposing the particle to an energy source to stimulate the **spectral** emission;
(iii) correlating the **spectral** emission with the orientation of the item of interest; and
(iv) repeating steps (i)-(iii) at known intervals;
(G) tracking the change in conformation of an item of interest, while the item is in motion, comprising:

(i) providing an item of interest with which a plurality of particles (which have characteristic **spectral** emissions which are characterized at least in part by polarization) is associated;

(ii) exposing the particle to an energy source to stimulate the **spectral** emission;

(iii) correlating the spectral emission with the conformation of the item of interest; and

(iv) repeating steps (i)-(iii) at known intervals;

(H) tracking fluid flow, comprising:

(i) providing identifiers which exhibit emission of light polarized in one dimension in response to exposure to a primary light source;

(ii) exposing a predefined volume of the fluid to a primary light source, which emits polarized light, to stimulate the emission;

(iii) correlating the emitted light with the position and orientation of at least a portion of the identifiers; and

(iv) repeating steps (i)-(iii);

(I) PM which exhibits an anisotropic transition dipole and which exhibits emission of polarized light in response to energy absorption;

(J) library of items of interest, in which each item of interest has one or more identifiers associated with it, where the identifiers each comprise a particle with a characteristic spectral emission, and where the spectral emission is characterized at least in part by polarization;

(K) apparatus for detection the orientation of a particle or other item of interest, comprising:

(i) the particle, which exhibits anisotropic spectral emission;

(ii) a detector comprising:

(a) at least three beam splitting mirrors;

(b) a polarizing filter associated with each mirror, where each polarizer passes light of a different orientation, and

(c) at least one photon detector such as a photomultiplier tube or CCD; and

(iii) means to correlate the spectral emission with the orientation of the particle.

ACTIVITY - None given.

MECHANISM OF ACTION - None given.

USE - The processes can be used for tracking and identifying items of interest such as identification tags, security tags, consumer products, fluids, gases, solids, biomolecules or chemical compounds. They can be used for tracking the orientation of large biomolecules such as DNA or proteins.

ADVANTAGE - The processes allow measurement of the three-dimensional orientation of sub-diffraction limited objects.

Dwg.0/3

L9 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 1988:45843 HCAPLUS
DN 108:45843
TI A comparative study of Moessbauer **spectroscopy** and x-ray **diffraction** for the elucidation of the microstructure of electrodeposited iron-chromium-nickel alloys
AU Vertes, A.; **Watson, A.**; Chisholm, C. U.; Czako-Nagy, I.; Kuzmann, E.; El-Sharif, M. R.
CS Dep. Chem., Paisley Coll. Technol., UK
SO Electrochim. Acta (1987), 32(12), 1761-7
CODEN: ELCAAV; ISSN: 0013-4686
DT Journal
LA English
AB Moessbauer spectroscopy and x-ray diffractometry were used to study electrodeposited Fe1-x-yCrxNiy (10 .ltoreq. x .ltoreq.24, 25 .ltoreq. y .ltoreq. 36) alloys. The main phase of the as-deposited samples was found

to be microcryst. having fcc. structure. The fcc. phase of the electroformed samples was ferromagnetic, contrary to the thermally prepd. alloys of the same compn., which were paramagnetic. The electrochem. prepd. materials also contain some microcryst. paramagnetic phases. The hyperfine field distribution anal. of the Moessbauer spectra shows, that a pptn. process takes place in the electrodeposits, due to the heat treatment.

=>

```
=> d his

     (FILE 'HOME' ENTERED AT 12:21:18 ON 14 FEB 2002)

     FILE 'HCAPLUS' ENTERED AT 12:21:25 ON 14 FEB 2002
L1       652113 S SPECTRA OR SPECTRAL OR SPECTRUM
L2       169617 S  DETECTOR# OR SENSOR#
L3        77669 S IMAGING
L4           64 S L1 (L) L2 (L) L3
L5        84655 S LABEL?
L6       101171 S DIFFRACTION OR DIFFRACTO?
L7        44410 S ENERGY (L) EXCITA?
L8            1 S L4 AND L5
L9            3 S L4 AND L6
L10           2 S L4 AND L7
L11           4 S L8 OR L9 OR L10
L12       74815 S (2 OR TWO  ) (2W) (D OR DIMENSION?) OR 2D
L13      238783 S ((2 OR TWO  ) (2W) (D OR DIMENSION?) OR 2D)/AB
L14      260775 S L12 OR L13
L15           9 S L4 AND L14
L16        3804 S L3 (L) SYSTEM?
L17         207 S L16 AND L14
L18          10 S L17 AND L1
L19          21 S L11 OR L15 OR L18

=> d .ca 1-19

L19  ANSWER 1 OF 21  HCAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:        2002:105721  HCAPLUS
TITLE:                   Spectral drift and correction technique for
                         hyperspectral imaging systems
INVENTOR(S):             Gorin,  Brian Allen
PATENT ASSIGNEE(S):      Bae Systems Information and Electronic Systems
                         Integration, Inc., USA
SOURCE:                  PCT Int. Appl.
                         CODEN: PIXXD2
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
     WO 2002010718      A2   20020207      WO 2001-US23418  20010726
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
             RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
             VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     US 2002015151      A1   20020207      US 2001-912549   20010726
PRIORITY APPLN. INFO.:                    US 2000-221270P  P  20000727
AB   A method for determining magnitude and direction of spectral channel drift
     for several consecutive spectral regions over a wide spectral range.
     According to the method of the present invention, in-field testing of a
     spectral filter sequentially irradiated by two backbody sources is
     performed to generate a response function of the spectral filter.  The
```

response function is ensemble averaged to reduce any noise. Background radiance is then removed to produce a smoothed spectral transmittance function of the spectral filter. The first derivative function of the smoothed spectral transmittance function is determined. The first derivative function is separated into spectral band regions having /- N pixels on either side of the function minima. The value of N is selected to optimize the detection algorithm sensitivity to change while extending the limit of spectral shift magnitude. The sum of the differences between the first derivative function and a reference spectral derivative function is determined. The difference result is applied to a look-up table to determine magnitude and direction of spectral drift for each of the separated spectral band regions. Use of the present invention can provide information on spectral distortion or spectral smile for **2-D** focal plane arrays used for hyperspectral imaging.

IC ICM G01N021-00

L19 ANSWER 2 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:763317 HCAPLUS
DOCUMENT NUMBER: 135:312861
TITLE: **Two-dimensional spectral imaging system**
INVENTOR(S): Empedocles, Stephen A.; Watson, Andrew R.
PATENT ASSIGNEE(S): Quantum Dot Corporation, USA
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001077678	A1	20011018	WO 2001-US11320	20010406

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-195520 P 20000406

AB Improved devices, systems, and methods for sensing and/or identifying signals from within a signal detection region are well-suited for identification of spectral codes. Large nos. of independently identifiable spectral codes can be generated by quite small bodies, and a plurality of such bodies or probes may be present within a detection region. Simultaneously imaging of identifiable spectra from throughout the detection region allows the probes to be identified. As the identifiable spectra can be treated as being generated from a point source within a much larger detection field, a prism, diffractive grading, holog. transmissive grading, or the like can spectrally disperse the images of the labels across a sensor surface. A CCD can identify the relative wavelengths of signals making up the spectra. Abs. signal wavelengths may be detd. by detg. positions of the labels, by an internal wavelength ref. within the spectra, or the like.

IC ICM G01N033-53
CC 79-2 (Inorganic Analytical Chemistry)
ST **spectrum imaging system**

IT **Sensors**
(Areal; **two-dimensional spectral imaging system**)
IT **Diffraction** gratings
(Dispersive reflective; **two-dimensional spectral imaging system**)
IT **Energy**
(**Excitation; two-dimensional spectral imaging system**)
IT Analytical apparatus
(**Spectral; two-dimensional spectral imaging system**)
IT Spheres
(beads; **two-dimensional spectral imaging system**)
IT Information **systems**
(code; **two-dimensional spectral imaging system**)
IT Information **systems**
(data, **Spectral; two-dimensional spectral imaging system**)
IT **Diffraction** gratings
(dispersive transmission; **two-dimensional spectral imaging system**)
IT Calibration
Charge coupled devices
Diffractometers
Energy
Filtration
Fluids
Imaging
Indicators
Interface
Labels
Nanocrystals
Optical beam splitters
Optical **detectors**
Optical **imaging** devices
Optical **sensors**
Prisms
Semiconductor materials
Sensors
Spectra
Time
Wavelength
(**two-dimensional spectral imaging system**)
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:539577 HCAPLUS
DOCUMENT NUMBER: 135:217177
TITLE: Solar neutrino results from Super-Kamiokande
AUTHOR(S): Takeuchi, Y.
CORPORATE SOURCE: Super-Kamiokande Collaboration, Kamioka Observatory, ICRR, Univ. of Tokyo, Gifu, 506-1205, Japan
SOURCE: Proc. Int. Conf. High Energy Phys., 30th (2001), Meeting Date 2000, Volume 2, 917-920. Editor(s): Lim, C. S.; Yamanaka, Taku. World Scientific Publishing

Co. Pte. Ltd.: Singapore, Singapore.
CODEN: 69BOMS
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The latest Super-Kamiokande results of the solar neutrino flux, day/night results, energy spectrum measurements, and oscillation analyses are reported. The observation period spans May 31, 1996 to Apr. 24, 2000, which corresponds to a detector live time of 1117 days. Our preliminary results indicate 1.3.sigma. difference between day and night flux, and the energy spectrum expressed as data/(BP98 SSM) is consistent with a flat spectrum with .chi.**2/D**.O.F. = 13.7/17. Comparing global-flux oscillation anal. and SK day and night spectra, MSW SMA region, Just-So region and 2-flavor sterile solns. are disfavored at 95% C.L.
CC 70-7 (Nuclear Phenomena)
IT Cherenkov radiation **detectors**
Neutrino **detectors**
(solar neutrino results from Super-Kamiokande, a large cylindrical **imaging** water Cherenkov **detector**, including flux, difference between day and night flux, energy **spectrum** and oscillation analyses)
IT 12587-66-5, Neutrino
RL: OCU (Occurrence, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); OCCU (Occurrence); PROC (Process)
(solar; solar neutrino results from Super-Kamiokande, a large cylindrical **imaging** water Cherenkov **detector**, including flux, difference between day and night flux, energy **spectrum** and oscillation analyses)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 4 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:406606 HCAPLUS
DOCUMENT NUMBER: 135:187635
TITLE: PtSi IRFPA camera and its application in infrared solar spectrum observation
AUTHOR(S): Cao, Wenda; Ye, Binxun; He, J.
CORPORATE SOURCE: Beijing Astronomical Observatory, Chinese Academy of Sciences, Beijing, 10012, Peop. Rep. China
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (2000), 4130(Infrared Technology and Applications XXVI), 800-807
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Although the interest in PtSi IR focal plane array (IRFPA) has waned due to its low quantum efficiency compared with InSb and HgCdTe arrays, it is very potential in observing brighter celestial objects. The authors explored the possibility of applying it to the observation of IR solar spectrum. The methods of the simulation and calibration in observation are introduced and discussed. Using this kind of camera, a new observational band (Fe I 1.56 .mu.m) is added to the **Two-Dimensional** Multi-Band Solar Spectrograph at Yunnan Observatory. The dispersion for Fe I 1.56 .mu.m of the new IR solar spectrograph is 0.0722 .ANG. per pixel, and each vertical pixel represents 0.51 in of solar disk. It is specially suitable for **2-dimensional** spectroscopic observation of the deepest solar photosphere. Some primary observation results are also presented.
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73
IT Optical **detectors**
(IR, **imaging**; platinum silicide IR focal plane array camera and application in IR solar **spectrum** observation)
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:94851 HCAPLUS
DOCUMENT NUMBER: 134:287518
TITLE: CZT detectors fabricated from horizontal and vertical Bridgman-grown crystals
AUTHOR(S): Hermon, H.; Schieber, M.; Lee, E. Y.; McChesney, J. L.; Goorsky, M.; Lam, T.; Meerson, E.; Yao, H.; Erickson, J.; James, R. B.
CORPORATE SOURCE: The Hebrew University of Jerusalem, Jerusalem, 91904, Israel
SOURCE: Nucl. Instrum. Methods Phys. Res., Sect. A (2001), 458(1-2), 503-510
CODEN: NIMAER; ISSN: 0168-9002
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Characterizations of Cd1-xZnxTe (0.04<x<0.24) detector crystals grown by vertical high-pressure Bridgman (VHPB), vertical ambient pressure Bridgman (VB), horizontal ambient pressure Bridgman (HB) and vapor-grown crystals obtained from various sources were compared. The following methods were applied: (1) Triaxial double crystal x-ray diffraction (TADXRD) to det. the crystal homogeneity and Zn content. (2) Sensitivity to radiation from high-flux x-rays to study detector efficiency and contacts. (3) Laser-induced transient charge technique (TCT) for measuring the carrier lifetimes. (4) Thermoelec. voltage spectroscopy (TEVS) and thermal-stimulated current spectroscopy, (TSC) to study the carrier traps. (5) IR imaging to characterize macroscopic cryst. defects. The authors compared Cd Zn telluride crystals grown by different methods to understand better the nature of defects, which influence their nuclear spectroscopic response, and how the defects are affected by the growth technique.
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 71, 76, 79
ST cadmium zinc telluride radiation **detector** property Bridgman growth; hole lifetime cadmium zinc telluride radiation **detector** Bridgman growth; thermoelec **spectra** cadmium zinc telluride radiation **detector** Bridgman growth; photocond **spectra** cadmium zinc telluride radiation **detector** Bridgman growth; defect crystal cadmium zinc telluride radiation **detector** Bridgman growth; **imaging** IR cadmium zinc telluride radiation **detector** Bridgman growth; elec resistance cadmium zinc telluride radiation **detector** Bridgman growth; electron lifetime cadmium zinc telluride radiation **detector** Bridgman growth; x ray **diffraction** cadmium zinc telluride radiation **detector** Bridgman; carrier lifetime cadmium zinc telluride radiation **detector** Bridgman growth; trap carrier cadmium zinc telluride radiation **detector** Bridgman growth
IT Crystal defects
Electric resistance
Radiation detectors
Trapping
X-ray **diffraction**
(CZT detectors fabricated from horizontal and vertical Bridgman-grown

crystals)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 6 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:7204 HCAPLUS
DOCUMENT NUMBER: 134:169788
TITLE: Photon-counting CCD detector as a tool of x-ray imaging
AUTHOR(S): Liang, Y.; Ida, K.; Kado, S.; Minami, T.; Okamura, S.; Nomura, I.; Watanabe, K. Y.; Yamada, H.
CORPORATE SOURCE: CHS Group, and, Department of Fusion Science, Graduate University for Advanced Studies, Toki, 509-5292, Japan; LHD Group
SOURCE: Rev. Sci. Instrum. (2001), 72(1, Pt. 2), 717-720
CODEN: RSINAK; ISSN: 0034-6748
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new x-ray imaging technique to measure magnetic axis and **2-dimensional** soft x-ray energy spectra for a long-pulse discharge has been developed by utilizing a soft x-ray photon-counting CCD camera. This system consists of pinholes, Be filters, and a 1024.times.1024 frame-transfer back-illumination CCD detector (the imaging area has 1024.times.512 pixels). By choosing appropriate combinations of pinholes and Be filters, the x-ray flux is adjusted to the level suited for photon-counting mode and imaging mode, resp. The Shafranov shift is derived from a **2-dimensional** soft x-ray intensity map measured in the imaging mode in the Compact Helical System (CHS) and large helical device. **Two-dimensional** profiles of electron temp. and **two-dimensional** profiles of high-Z impurity K.alpha. radiation intensity are derived from **2-dimensional** energy spectra of x-rays measured in photon-counting mode for the CHS hot-electron-mode plasma.
CC 71-2 (Nuclear Technology)
Section cross-reference(s): 73, 74
IT CCD cameras
Electron temperature
Impurities
Soft x-ray
Soft x-ray **spectra**
(photon-counting CCD **detector** as an x-ray **imaging** tool for fusion plasma applications)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 7 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:784326 HCAPLUS
DOCUMENT NUMBER: 132:28442
TITLE: Multi-slit imaging spectrometer
INVENTOR(S): Ansley, David A.; Cook, Lacy G.
PATENT ASSIGNEE(S): Raytheon Company, USA
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

WO 9963311	A1	19991209	WO 1999-US10154	19990510
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1002220	A1	20000524	EP 1999-920416	19990510
R: DE, FR, GB				

PRIORITY APPLN. INFO.: US 1998-90712 19980604
WO 1999-US10154 19990510

AB The slits are sepd. by a sepn. distance equal to an integral multiple of the detector width dimension, where the multiple is equal to (N times the no. of slits) plus or minus one, where N is an integer. Multi-slit spectrometers are described which comprise a multi-slit structure defining a plurality of parallel thin slits; a first optical structure for directing object light onto the multi-slit structure; a light dispersing element; an optical collimating device for collimating and directing light which has passed through the slits of the multi-slit structure onto the light dispersing element; and an optical focusing structure for focusing light which has passed through the light dispersing element at an image plane. A **two-dimensional** detector array of detector elements may be placed at the image plane. Use of the multi-slit spectrometer in combination with a **two-dimensional** detector array allows simultaneous spectral anal. of several objects. Airborne sensor using the spectrometers are discussed in which a mirror which rotates at an angular velocity related to the velocity of the airborne platform directs object light so as to freeze the image from one or more objects onto the multi-slit structure for an integration time.

IC ICM G01J003-28

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT Spectrometers
(**imaging**, multi-slit; multi-slit **imaging** spectrometers and **detector** array combinations for simultaneous **spectral** anal. of multiple objects)

IT IR spectrometers
(multi-slit **imaging** spectrometers and **detector** array combinations for simultaneous **spectral** anal. of multiple objects)

IT Optical **imaging** devices
(spectrometers, multi-slit; multi-slit **imaging** spectrometers and **detector** array combinations for simultaneous **spectral** anal. of multiple objects)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 8 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:274331 HCAPLUS
DOCUMENT NUMBER: 130:342153
TITLE: Remote sensing for gas plume monitoring using state-of-the-art infrared hyperspectra imaging
AUTHOR(S): Hinnrichs, Michele
CORPORATE SOURCE: Pac. Adv. Technol., Santa Ynez, CA, 93460-0359, USA
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1999), 3534(Environmental Monitoring and Remediation Technologies), 370-381
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Under contract to the US Air Force and Navy, Pacific Advanced Technol. has developed a very sensitive hyperspectral imaging IR camera that can

perform remote imaging spectro-radiometry. One of the most exciting applications for this technol. is in remote monitoring of gas plume emissions. Pacific Advanced Technol. (PAT) currently has the technol. available to detect and identify chem. species in gas plumes using a small light wt. IR camera the size of a camcorder. Using this technol. as a remote sensor can give advanced warning of hazardous chem.vapors undetectable by the human eye as well as monitor species concns. in a gas plume from smoke stack and fugitive leaks. Some gas plumes that have been measured and species detected using an IMSS imaging spectrometer are refinery smoke stacks plumes with emission of CO2, CO, SO2, NOx. Low concn. vapor unseen by the human eye that has been imaged and measured in acetone vapor evapg. at room temp. The PAT hyperspectral imaging sensor is called "Image Multi-spectral Sensing or IMSS". The IMSS instrument uses diffractive optic technol. and exploits the chromatic aberrations of such lenses. Using diffractive optics for both imaging and dispersion allows for a very low cost light wt. robust imaging spectrometer. PAT has developed imaging spectrometers that span the spectral range from the visible, midwave IR (3 to 5 .mu.) and longwave IR (8 5o 12 .mu.) with this technol. This paper will present the imaging spectral data that we have collected on various targets with our hyperspectral imaging instruments as will also describe the IMSS approach to imaging spectroscopy.

CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 47, 51, 79

IT Video cameras
(IR Image Multi-**spectral Sensor**; remote sensing gas plume monitoring using IR hyperspectra **imaging**)

IT Air pollution monitoring
Exhaust gases (engine)
Optical **diffraction**
Waste gases
(remote sensing gas plume monitoring using IR hyperspectra imaging)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 9 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:263869 HCAPLUS
DOCUMENT NUMBER: 130:303809
TITLE: Advanced FT-IR instrumentation and applications: **2-dimensional** array **sensor** on FT-IR **spectral imaging**
AUTHOR(S): Yokoyama, Toru
CORPORATE SOURCE: Analytical Instrument Division, Nippon Bio-Rad Laboratories, Higashi-Nippori, Arakawa-ku, Tokyo, 116-0014, Japan
SOURCE: Nippon Sekigaisen Gakkaishi (1998), 8(2), 62-69
CODEN: NSGKET; ISSN: 0916-7900
PUBLISHER: Nippon Sekigaisen Gakkai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB IR spectral imaging instrument with a **2 dimensional** array detector and a step scan FT-IR interferometer is introduced on its basic configurations and workings. Some IR spectral imaging data and the usefulness of IR spectral imaging method is described.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST FT IR **spectral imaging two dimensional** array **sensor**

IT Polyamides, properties
RL: PRP (Properties)
(**two dimensional** FT-IR spectra of)

IT IR **detectors**
(**two dimensional** array on FT-IR **spectral imaging**)
IT 9003-07-0, Polypropylene 25053-53-6, Poly ethylene methacrylic acid
RL: PRP (Properties)
(**two dimensional** FT-IR spectra of)

L19 ANSWER 10 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:587813 HCAPLUS
DOCUMENT NUMBER: 129:341256
TITLE: Simultaneous ESR-CT imaging of plural radicals using **spectral**-spatial imaging techniques
AUTHOR(S): Matsumoto, Ken-Ichiro; Utsumi, Hideo
CORPORATE SOURCE: Faculty of Pharmaceutical Sciences, Kyushu University, Tokyo, 194, Japan
SOURCE: Mod. Appl. EPR/ESR, Proc Asia-Pac. EPR/ESR Symp., 1st (1998), Meeting Date 1997, 628-635. Editor(s): Rudowicz, Czeslaw Z.; Yu, Peter K. N.; Hiraoka, H. Springer-Verlag: Singapore, Singapore.
CODEN: 66RJAQ
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The ESR-CT imaging by the phantom involving two radical species giving different signals is reported. Spectral-spatial images were obtained along four directions on X-Z plane. Spatial information of each signal species was sepd. from the corresponding spectral-spatial image. The spatial information was obtained by two methods; 1) using peak height, and 2) using peak area. Two sets of CT images of two different spin probes were reconstructed. In the former method, sepn. was not complete. CT images had good agreement with the arrangement of phantom. This technique was applied to imaging of evaluation of drug-delivery-system. Images were obtained from both spin-labeled compds. encapsulated in and released from liposome. The other application of this technique was simultaneous imaging of spin trapped nitric oxide (.bul.NO) and hydroxyl radical (.bul.OH) as one of reactive oxygen species (ROS). **2D** distributions of both radicals were obtained using phantom.
CC 8-1 (Radiation Biochemistry)
Section cross-reference(s): 1, 77
ST EPR CT **spectral** spatial imaging radical
IT Imaging
Tomography
(ESR; simultaneous ESR-CT imaging of plural radicals using **spectral**-spatial imaging techniques)
IT Liposomes (drug delivery **systems**)
(simultaneous ESR-CT **imaging** of plural radicals using **spectral**-spatial **imaging** techniques)
IT Reactive oxygen species
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)
(simultaneous ESR-CT imaging of plural radicals using **spectral**-spatial imaging techniques)
IT Imaging
(**spectral**-spatial; simultaneous ESR-CT imaging of plural radicals using **spectral**-spatial imaging techniques)
IT ESR (electron spin resonance)
(tomog.; simultaneous ESR-CT imaging of plural radicals using **spectral**-spatial imaging techniques)
IT 3352-57-6, Hydroxyl radical, analysis 4399-80-8, C-PROXYL 10102-43-9, Nitrogen oxide (NO), analysis 18390-00-6, PTIO 64486-64-2, CAT-1
RL: ANT (Analyte); ANST (Analytical study)

(simultaneous ESR-CT imaging of plural radicals using **spectral** -spatial imaging techniques)

IT 151268-43-8
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(simultaneous ESR-CT imaging of plural radicals using **spectral** -spatial imaging techniques)

IT 3317-61-1, DMPO
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(simultaneous ESR-CT imaging of plural radicals using **spectral** -spatial imaging techniques)

L19 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:292965 HCAPLUS
DOCUMENT NUMBER: 126:340582
TITLE: Use of a novel **spectral** bio-**imaging** **system** as an **imaging** oximeter in intact rat brain
AUTHOR(S): Soenksen, Dirk G.; Sick, Thomas J.; Garini, Yuval
CORPORATE SOURCE: Applied Spectral Imaging Inc., Carlsbad, CA, 92009, USA
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1996), 2679(Advances in Laser and Light Spectroscopy to Diagnose Cancer and Other Diseases III: Optical Biopsy), 182-189
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The use of reflection spectrophotometry to measure the spectra of oxy-Hb and deoxy-Hb, strong absorbers of light in the visible region of the spectrum, is a well established method for detg. tissue oxygenation. This type of spectral measurement is typically made with a point-spectrometer and provides information only at a single point. An imaging spectrometer, on the other, can measure the Hb spectra at every pixel in the image, thus providing a **two-dimensional** (spatial) map of tissue ischemia. A novel spectral bio-imaging system based on the SpectraCube technol., an optical method based on proven Fourier transform (FT) spectroscopy, has been applied successfully in intact rat brain to measure oxy- and deoxy-Hb spectra. Spectral images contg. 10,000 spectra were acquired in a rat ventilated with 30% O2, and repeated when the inspired gas mixt. was switched for 45 s to 100% nitrogen. Differences in Hb spectra corresponding to real differences in tissue oxygenation are readily apparent under these two conditions. There is also some evidence that information concerning cytochromes is present in these spectral images, and algorithms are currently being developed to ext. the signatures of cytochromes. Details of the spectral bio-imaging system and the results of the measurements made in intact rat brain will be discussed.

CC 9-1 (Biochemical Methods)

IT Analytical apparatus
Medical equipment
(oximeters; use of a novel **spectral** bio-**imaging** **system** as an **imaging** oximeter in intact rat brain)

IT Brain
(use of a novel **spectral** bio-**imaging system** as an **imaging** oximeter in intact rat brain)

IT Hemoglobins
Oxyhemoglobins
RL: ANT (Analyte); ANST (Analytical study)
(use of a novel **spectral** bio-**imaging system**

as an **imaging** oximeter in intact rat brain)

L19 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1996:519798 HCAPLUS
DOCUMENT NUMBER: 125:208269
TITLE: Remote **spectral imaging system** (RSIS) based on an acousto-optic tunable filter (AOTF)
AUTHOR(S): Moreau, Frederick; Hueber, Dennis M.; Vo-Dinh, Tuan
CORPORATE SOURCE: Health Sciences Research Division, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, USA
SOURCE: Instrum. Sci. Technol. (1996), 24(3), 179-193
CODEN: ISCTEF; ISSN: 1073-9149
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This paper describes a new remote spectral imaging system (RSIS) based on an acousto-optic tunable filter (AOTF) capable of remote sensing using an imaging fiber-optic probe (IFP). A **2-dimensional** charge coupled device (CCD) was used as a detector. The AOTF was used as a wavelength selector. Unlike a tunable grating or prism based monochromator, the tunable filter has no moving parts, and it can be rapidly tuned to any wavelength in its operating range. The large aperture of the AOTF and its high spatial resoln. allowed the optical image from an IFP to be recorded by a CCD. These characteristics, combined with their small size, make AOTF's important new alternatives to conventional monochromators, esp. for spectral multi-sensing and imaging. A prototype RSIS system, using both IFP and AOTF, was developed and its feasibility for spectral imaging was demonstrated.
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT Optical **imaging** devices
(acoustooptical filter; remote **spectral imaging system** (RSIS) based on tellurium dioxide acoustooptical tunable filter (AOTF))
IT 7446-07-3, Tellurium dioxide 7783-40-6, Magnesium difluoride
RL: DEV (Device component use); USES (Uses)
(remote **spectral imaging system** (RSIS) based on tellurium dioxide acoustooptical tunable filter (AOTF))

L19 ANSWER 13 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:646766 HCAPLUS
DOCUMENT NUMBER: 123:68864
TITLE: Strain imaging analysis of Si using Raman microscopy
AUTHOR(S): Ajito, K.; Sukamto, J. P. H.; Nagahara, L. A.; Hashimoto, K.; Fujishima, A.
CORPORATE SOURCE: Fac. Eng., Univ. Tokyo, Bunkyo, 113, Japan
SOURCE: J. Vac. Sci. Technol., A (1995), 13(3, Pt. 2), 1234-8
CODEN: JVTAD6; ISSN: 0734-2101
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The authors present **two-dimensional** strain image mapping of the SiO2/Si interface on an Al/SiO2 patterned Si wafer using a modified Raman microscope. A pos. shift in the Si Raman peak by .apprx.1.0 cm-1, corresponding to 2.49 .times. 108 Pa compressive strain, was obsd. along particular edges between the Al/SiO2 patterned features and bare Si substrate. In addn. to strain mapping, surface disorder in the Si wafer was also detected with this technique.
CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

IT Raman **spectra**
(strain imaging anal. of Si using Raman microscopy)
IT 7429-90-5, Aluminum, uses 7631-86-9, Silicon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(Raman microscopy in strain **imaging** anal. of Si in **system** with)

L19 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:623768 HCAPLUS
DOCUMENT NUMBER: 123:212428
TITLE: Increased photon counting efficiency for multi-**spectral** imaging using rotational spectro-tomography
AUTHOR(S): Bernhardt, P. A.
CORPORATE SOURCE: Plasma Physics Division, Naval Research Laboratory, Washington, DC, 20375-5320, USA
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1995), 2386, 288-302
CODEN: PSISDG; ISSN: 0277-786X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Multi-spectral imaging can be a powerful tool for medial diagnostics. Many time resolved or low-light-level applications require large photon throughput to distinguish between areas of normal and diseased tissues. The throughput of a dispersive, imaging spectrometer is often much less than unity and consequently limits sensitivity. Common multi-spectral approaches use either (1) narrow band filters to isolate **two-dimensional** spatial images for each spectral wavelength channel or (2) a slit spectrograph to image one spatial and one spectral dimension as the slit is scanned across the object. Both of these approaches are inefficient because photons outside the filter passband or the slit area are not detected. A new imaging technique called spectro-tomog. collects all available photons and employs computer tomog. to reconstruct the three-dimensional data cube of the image. A rotational spectro-tomog. imager was designed with a circular aperture, objective-grating camera that is rotated in steps around its optical axis. A sequence of images was obtained with fixed steps in camera angle by rotation and lens focal-length by zooming. These images provide a sufficient no. of **two-dimensional** projections of the 3-dimensional data cube for accurate reconstruction. Both direct Fourier transform and filter-back-projection algorithms were developed for tomog. reconstructions. The data cube of a broad spectrum object with 64 spectral bands and 64.times.64 spatial resoln. elements was used as the test case for a numerical example of the technique.
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST increased photon counting **spectral** imaging; rotational spectro tomog imaging algorithm
IT Algorithm
(for increased photon counting efficiency for multi-**spectral** imaging using rotational spectro-tomog.)
IT Cameras
Optical filters
(in **system** for multi-**spectral imaging** using rotational spectro-tomog.)
IT Imaging
(increased photon counting efficiency for multi-**spectral** imaging using rotational spectro-tomog.)
IT Spectrometers
(increased photon counting efficiency for multi-**spectral** imaging using rotational spectro-tomog. spectrometer)

L19 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:596775 HCAPLUS
DOCUMENT NUMBER: 123:20154
TITLE: A particle energy determination with an imaging plate
AUTHOR(S): Takebe, Masahiro; Abe, Ken; Souda, Manabu; Satoh, Yoshiyuki; Kondo, Yasuhiro
CORPORATE SOURCE: Department of Nuclear Engineering, Tohoku University, Sendai, 980-77, Japan
SOURCE: Nucl. Instrum. Methods Phys. Res., Sect. A (1995), 359(3), 625-7
CODEN: NIMAER; ISSN: 0168-9002
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The stimulation spectra of Eu2+ luminescence in BaFBr:Eu2+-based imaging plates are strongly dependent on the energies of the incident charged particles and the ratios of the luminescences stimulated by 2 different light wave lengths, e.g. 600 and 500 nm, indicating simply the energies. This addnl. feature enables one to det. the incident particle energies by the imaging plate itself, keeping all the high performances of the imaging plate intact.
CC 71-7 (Nuclear Technology)
ST particle **energy** detn imaging plate; luminescence **excitation** europium barium bromide fluoride; radiation detector **energy** particle detn
IT Radiation counters and **detectors**
(**imaging** plates; luminescence **spectra** stimulated in europium-doped barium bromide fluoride-based **imaging** plates as particle energy **detectors**)

L19 ANSWER 16 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:579417 HCAPLUS
DOCUMENT NUMBER: 123:217362
TITLE: Absorption spectra and multicapillary imaging detection for capillary isoelectric focusing using a charge coupled device camera
AUTHOR(S): Wu, Jiaqi; Pawliszyn, Janusz
CORPORATE SOURCE: Dep. of Chemistry, Univ. of Waterloo, Waterloo, ON, N2L 3G1, Can.
SOURCE: Analyst (Cambridge, U. K.) (1995), 120(5), 1567-71
CODEN: ANALAO; ISSN: 0003-2654
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Two absorption imaging detectors using charge coupled device (CCD) cameras are designed for capillary isoelec. focusing (CIEF). In the 1st detector, a light beam passes through a 4. cm capillary and is dispersed by a grafting onto a CCD camera. The **2-dimensional** CCD in the camera records the light absorption at different positions along the capillary in 1 dimension, and at different wavelengths in the 2nd dimension, simultaneously. The resoln. in wavelength is .apprx.1 nm. Since the sepn. time in the 4 cm long capillary column is only 4 min, the complete anal. takes 4 min, which is much faster than conventional CIEF methods. In the 2nd detector, a light beam passes through a capillary array and then onto a CCD camera. Isoelec. focusing sepn. and detection of several samples can be completed in .apprx.4 min, and the focusing processes in all capillaries can be obsd. simultaneously by the real-time, online imaging detector. In both detectors, images are normalized by light intensity, recorded simultaneously with the images, to compensate for intensity fluctuation of the light source. The detection limit of the detector is 1.5 .times. 10-3 absorbance units. The pH resoln. of the

instrument with the 4 cm long capillaries is 0.01 which is the same or better than that of conventional CIEF instruments with much longer capillaries. The deviation in pH of replicate zone positions in different capillaries of the capillary array is <0.01 which is much better than capillary array IEF methods using the mobilization process.

CC 80-2 (Organic Analytical Chemistry)
Section cross-reference(s): 34

IT Electrophoresis and Ionophoresis
(**detectors**, capillary; absorption **spectra** and multicapillary **imaging** detection for capillary isoelec. focusing using a charge coupled device camera)

L19 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:284753 HCAPLUS
DOCUMENT NUMBER: 120:284753
TITLE: Optically-stimulable transparent KCl:Eu crystal as a storage material for **two-dimensional** UV-ray or x-ray imaging sensors
AUTHOR(S): Nanto, Hidehito; Murayama, Kazuhiko; Endo, Fumutaka; Hirai, Yoshiaki; Taniguchi, Shinichi; Takeuchi, Nozomu
CORPORATE SOURCE: Electron Device Syst. Res. Lab., Kanazawa Inst. Technol., Ishikawa, 921, Japan
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1993), 1987(Recording Systems), 161-70
CODEN: PSISDG; ISSN: 0277-786X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Intense optically stimulated luminescence (OSL) with a peak at about 420 nm is obsd. in UV-ray or X-ray irradiated europium-doped potassium chloride (KCl:Eu) crystals. The OSL intensity is increased with increasing UV-ray or x-ray irradn. dose. This suggests that KCl:Eu crystal is useful as a material for **two-dimensional** UV-ray or x-ray Imaging sensor utilizing OSL phenomenon. The results obtained are consistent with the proposed emission mechanisms of the 420 nm OSL peak, based on the recombination of electrons released from the F centers with Eu3+ ions. The excitation mechanism for the OSL in UV-ray irradiated KCl:Eu crystals is also discussed.

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT Recombination of electron with ion
(in UV or x-ray irradiated europium-doped potassium chloride crystals, for **two-dimensional** imaging sensors)

IT Ultraviolet and visible **spectra**
(of europium-doped potassium chloride crystals, for **two-dimensional** UV or x-ray **imaging sensors**)

IT Photolysis
(UV, of europium-doped potassium chloride crystals, stimulated luminescence by, for **2D** UV imaging sensors)

IT Radiolysis
(x-ray, of europium-doped potassium chloride crystals, stimulated luminescence by, for **2D** x-ray imaging sensors)

IT 7447-40-7, Potassium chloride (KCl), uses
RL: USES (Uses)
(**two-dimensional** UV or x-ray imaging sensors using europium-doped)

IT 7440-53-1, Europium, uses 13759-92-7, Europium trichloride hexahydrate
RL: USES (Uses)
(**two-dimensional** UV or x-ray imaging sensors using potassium chloride crystal doped with)

L19 ANSWER 18 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:90409 HCAPLUS
DOCUMENT NUMBER: 114:90409
TITLE: Gamma-ray spectral imaging using a single-shutter radiation camera
AUTHOR(S): DeVol, T. A.; Wehe, D. K.; Knoll, G. F.
CORPORATE SOURCE: Univ. Michigan, Ann Arbor, MI, 48109-2100, USA
SOURCE: Nucl. Instrum. Methods Phys. Res., Sect. A (1990), A299(1-3), 495-500
CODEN: NIMAER; ISSN: 0168-9002
DOCUMENT TYPE: Journal
LANGUAGE: English

AB As part of a program to develop mobile robots for reactor environments, a radiation-imaging camera capable of operating in medium-intensity (<2 R/h), medium-energy (<8 MeV) gamma-ray fields was developed. A systematic study of available detectors scintillator (1.25 .times. 1.25 cm right-circular cylinder) coupled to a photomultiplier tube (PMT) operated in pulse mode. Measurements yielded an angular resoln. of 2.5.degree. and energy resoln. of 12.9% at 662 keV. The camera motion is totally automated and controlled by sepping motors connected to a remote computer. Several **2-dimensional** images of radioactive sources were acquired in fields of .ltoreq.400 mR/h and energyes .ltoreq.2.75 MeV. Some of the images demonstrate the ability of the camera to image a polychromatic field.

CC 71-7 (Nuclear Technology)
Section cross-reference(s): 74

ST gamma ray **spectral imaging** camera; radiation camera
gamma ray; **detector** radiation **imaging** camera

IT 12233-56-6, BGO
RL: PROC (Process)
(radiation **detectors**, as single-shuttler cameras for gamma-ray **spectral imaging**)

L19 ANSWER 19 OF 21 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1987:467968 HCAPLUS
DOCUMENT NUMBER: 107:67968
TITLE: The Kwasan Image Processing System
AUTHOR(S): Nakai, Yoshihiro; Kitai, Reizaburo; Asada, Tadashi; Iwasaki, Kyosuke
CORPORATE SOURCE: Kwasan and Hida Obs., Kyoto, 607, Japan
SOURCE: Mem. Fac. Sci., Kyoto Univ., Ser. Phys., Astrophys., Geophys. Chem. (1986), 37(1), 59-72
CODEN: MFKPAQ; ISSN: 0368-9689
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The Kwasan Image Processing System is a general purpose interactive image processing and analyzing system designed to process a large amt. of photog. and photoelec. data. The hardware of system mainly consists of a PDS MICRO-10 microdensitometer, a VAX-11/750 minicomputer, a 456 M bytes Winchester disk, and a VS11 color-graphic terminal. Some of the most important designing features of the system are to permit the (2) easy access to his data in both visual image and graphic display in response interactively to the available menu of optional programs. The application program PDS, KIPS, STH enable users to analyze spectrog. plates and **2-dimensional** images without site-special knowledge of programming.

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT **Imaging**
Photography

(digital image processing **system** Kwasan for)
IT Computer application
Optical **imaging** devices
(in digital image processing **system** Kwasan, for photog. solar images and **spectral** data from photoelec. devices)

```
=> fil wpids
FILE 'WPIDS' ENTERED AT 12:36:16 ON 14 FEB 2002
COPYRIGHT (C) 2002 DERWENT INFORMATION LTD

FILE LAST UPDATED: 13 FEB 2002              <20020213/UP>
MOST RECENT DERWENT UPDATE            200210   <200210/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> SDI'S MAY BE RUN ON EVERY UPDATE OR MONTHLY AS OF JUNE 2001.
    (EVERY UPDATE IS THE DEFAULT). FOR PRICING INFORMATION
    SEE HELP COST <<<

>>> FOR UP-TO-DATE INFORMATION ABOUT THE DERWENT CHEMISTRY
    RESOURCE, PLEASE VISIT
         http://www.derwent.com/chemistryresource/index.html <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES,
    SEE http://www.derwent.com/dwpi/updates/dwpicov/index.html <<<

=> d his


     (FILE 'WPIDS' ENTERED AT 12:28:10 ON 14 FEB 2002)
               DEL HIS Y
L1         70775 S SPECTRA OR SPECTRAL? OR SPECTRUM
L2         47333 S IMAGING
L3        652506 S DETECTOR# OR SENSOR?
L4           359 S L1 (L) L2 (L) L3
L5         46639 S LABEL?
L6         20592 S DIFFRACTO? OR DIFFRACTION?
L7          1133 S ENERGY (3A) EXCITA?
L8            22 S L4 AND L6
L9             0 S L7 AND L8
L10           13 S L4 AND L5
L11            2 S L4 AND L7
L12           14 S L10 OR L11
L13           22 S L8 NOT L12
L14        48345 S 2D OR (TWO OR 2) (2W) (DIMEN? OR D)
L15           56 S L14 AND L4
L16           10 S L15 AND (L5 OR L6 OR L7)
L17            0 S L16 NOT (L12 OR L13)

     FILE 'WPIDS' ENTERED AT 12:36:16 ON 14 FEB 2002

=> d .wp l12 1-14;d .wp l13 1-22

L12  ANSWER 1 OF 14  WPIDS COPYRIGHT 2002   DERWENT INFORMATION LTD
AN   2002-017473 [02]   WPIDS
DNN  N2002-013962       DNC C2002-005000
TI   Spectral label identification comprises spatially restraining
     first spectrally labeled body, generating spectrum from the
     body, dispersing spectrum across sensor surface, and identifying the body
     from dispersed spectrum.
DC   B04 D16 S02 S03
IN   EMPEDOCLES, S A; JIN, J; WATSON, A R
PA   (EMPE-I) EMPEDOCLES S A; (JINJ-I) JIN J; (WATS-I) WATSON A R; (QUAN-N)
     QUANTUM DOT CORP
CYC  95
PI   WO 2001077391 A1 20011018 (200202)* EN   52p
```

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
US 2002008148 A1 20020124 (200210)
ADT WO 2001077391 A1 WO 2001-US11391 20010406; US 2002008148 A1 Provisional US 2000-195520P 20000406, US 2001-827256 20010405
PRAI US 2000-195520P 20000406; US 2001-827256 20010405
AB WO 200177391 A UPAB: 20020109
NOVELTY - **Spectral label** identification, comprising spatially restraining a **spectrally labeled** body, generating a **spectrum** from the body while the body is spatially restrained, dispersing the **spectrum** from the body across a **sensor** surface, and identifying the body from the dispersed **spectrum**, is new.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a multiplexed assay system comprising a support structure having an array of sites, bodies, each having a **label** for generating an identifiable **spectrum** in response to **excitation energy**, and optical train **imaging** sites on a **sensor** surface. The optical train comprises a wavelength dispersive element.
USE - For detecting and/or identifying **spectrally labeled** bodies for performing multiplexed assays.
ADVANTAGE - The method allows detecting and/or identification of large numbers of **spectral** codes and/or signals in a repeatedly, highly time efficient manner, while providing improved flexibility, ease of use, and rare event/condition detection, and/or accuracy.
DESCRIPTION OF DRAWING(S) - The drawing shows an **imaging** system and high-throughput assay method.
Excitation energy 22.
Dwg.1/12

L12 ANSWER 2 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-579186 [65] WPIDS
DNN N2001-431058 DNC C2001-171934
TI New automated and integrated proteome analyzer, comprises separation cassette, an illumination and detection system and analysis system provides results quickly and does not require trained staff.
DC A89 B04 D16 S03
IN GUTTMAN, A; TAKACS, L
PA (PART-N) ENTERPRISE PARTNERS II; (INDO-N) INDOSUEZ INVESTMENT MANAGEMENT SERVICES
CYC 1
PI US 6277259 B1 20010821 (200165)* 12p
ADT US 6277259 B1 Provisional US 1998-83016P 19980424, US 1999-298800 19990423
PRAI US 1998-83016P 19980424; US 1999-298800 19990423
AB US 6277259 B UPAB: 20011108
NOVELTY - An automated and integrated proteome analyzer comprising a separation cassette, an illumination and detection system and an analysis system, is new.
DETAILED DESCRIPTION - An automated and integrated proteome analyzer comprising:
(a) a separation cassette for providing multi-dimensional separation of a proteinaceous sample which includes:
(i) a first dimension separation compartment housing a material having capillary channels, the proteinaceous sample being disposed in the capillary channel for first dimension separation;

(ii) a second dimension compartment housing a separation medium, the separation medium receiving the proteinaceous sample for second dimension separation; and

(iii) a power supply configured to apply an electric field across either the first dimension compartment or the second dimension compartment;

(b) an illumination and detection system positioned adjacent the second dimension compartment for illuminating and detecting the separated proteinaceous sample during second dimension separation; and

(c) an analysis system for processing data received from the illumination and detection system and formatting the data into a two-dimensional map representing the separated proteinaceous sample, is new.

INDEPENDENT CLAIMS are also included for the following:

(1) a separation cassette for providing two-dimensional separation; and

(2) analyzing a proteinaceous sample by two dimensional separation.

USE - A high performance, multi-dimensional proteome analyzer.

ADVANTAGE - Results are provided quickly and do not require a fully equipped clinical laboratory or specially trained personnel.

Dwg.0/4

L12 ANSWER 3 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-475054 [51] WPIDS
CR 1997-050627 [05]; 1999-008869 [01]; 2000-204877 [16]
DNN N2001-351621
TI Imaging system such as confocal microscope, has detector to position collector lens such that optical axis is perpendicular to specific focal plane.
DC S02 S03 V07
IN FIEKOWSKY, P; FODOR, S P A; RAVA, R; STERN, D; TRULSON, M; WALTON, I
PA (AFFY-N) AFFYMETRIX TECHNOLOGIES NV
CYC 1
PI US 6252236 B1 20010626 (200151)* 43p
ADT US 6252236 B1 Cont of US 1994-301051 19940902, Div ex US 1996-708335 19960904, Cont of US 1997-871269 19970609, US 1999-348216 19990706
FDT US 6252236 B1 Cont of US 5578832, Div ex US 5834758, Cont of US 6025601
PRAI US 1994-301051 19940902; US 1996-708335 19960904; US 1997-871269 19970609; US 1999-348216 19990706
AB US 6252236 B UPAB: 20010910

NOVELTY - Sample is placed on a support in such a way to intersect specific focal plane (200). An excitation lens transforms excitation radiation from laser source to a line and directs the line at the sample to excite specific regions. A collector lens with optical axis (280) perpendicular to focal plane, collects the reflected radiation and images it. A **detector** senses the reflected radiation and positions the lens to discriminate between radiation reflected from other planes that are perpendicular to optical axis.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for method to image sample.

USE - For **imaging** samples containing **labeled** markers such as confocal microscope.

ADVANTAGE - As the system has ability to retain the **spectral** information, the use of multi-**labeling** schemes is permitted, thus enhancing the level of information obtained. The focal lengths of optical lenses are manipulated to vary the dimensions of the excitation light, to make the system more compact. The resolution of image is increased to perfect value as the collector lens is manipulated by adjusting magnification of the collector lens.

DESCRIPTION OF DRAWING(S) - The figure shows the **imaging**

system.
Focal plane 200
Optical axis 280
Dwg.2/21

L12 ANSWER 4 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-407268 [43] WPIDS
DNN N2001-301274 DNC C2001-123302
TI Method for hyperspectral imaging of a fluorescently **labeled** nucleotide analogs, involves employing an apparatus having a light source, lenses (expansion, focusing, collection), imaging spectrometer and detector.
DC B04 D16 S03
IN BOGDANOV, V
PA (ORCH-N) ORCHID BIOSCIENCES INC
CYC 1
PI US 6245507 B1 20010612 (200143)* 21p
ADT US 6245507 B1 US 1998-135569 19980818
PRAI US 1998-135569 19980818
AB US 6245507 B UPAB: 20010801
NOVELTY - A method for hyperspectral **imaging** of a fluorescently **labeled** nucleotide analog comprising employing an apparatus having a light source, expansion lens, focusing lens, collection lens, **imaging** spectrometer and **detector**, is new.

DETAILED DESCRIPTION - A method for hyperspectral **imaging** of a fluorescently **labeled** nucleotide analog comprising employing an apparatus having a light source, expansion lens, focusing lens, collection lens, **imaging** spectrometer and **detector**, is new. The method comprises:

(a) emitting a transmission beam from a light source for hyperspectral **imaging**;

(b) expanding the transmission beam by passing the transmission beam through an expansion lens that expands the transmission beam for microarray detection;

(c) focusing the expanded transmission beam into a focus line for microarray detection by passing the expanded transmission beam through a focusing lens;

(d) contacting the fluorescently **labeled** nucleotide analog with the focused transmission beam, where the contact between the focused transmission line and the fluorescently **labeled** nucleotide analog excites the fluorescently **labeled** nucleotide analog to emit a fluorescent emission;

(e) collecting the fluorescent emission with a collection lens;

(f) projecting the collected fluorescent emission into an **imaging** spectrometer for hyperspectral **imaging**; and

(g) detecting the projected fluorescent emission using a **detector**.

USE - The method is useful for multi-dye/base detection of a nucleic acid molecule coupled to a solid surface and in sequence analysis. It is also useful in analyzing multi-color arrays in other tests, e.g. hybridization or differential display. In particular, the method may be used for detecting a mutation in a gene that, for example, plays a causative role in diseases, e.g. in cancer.

ADVANTAGE - The present invention provide a microscale sequencing technique and apparatus with significant advantages over other solid-phase sequencing techniques and apparatuses. These advantages include simplification of sample and reagent processing, rapid and sensitive detection, as well as compatibility with high through-put processing. Through strategic combinations of a highly sensitive CCD **detector** with parallel image spectrometry, hyperspectral **imaging**

detection on SPS microarrays has provided for a low-cost sequence analysis technology.

DESCRIPTION OF DRAWING(S) - The figure shows a hyperspectral (complete **spectrum**) detection apparatus for use in the method above.

Light source 1
Expansion lens 2
Expansion lens 3
Focusing lens 4
Focus line 5
Collection lens 6
Slit 7
Imaging spectrometer having the slit 8
Detector 9
Nucleic acid microchip 10
Dwg.1/8

L12 ANSWER 5 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-328508 [34] WPIDS
DNN N2001-236398 DNC C2001-100739
TI Fluorescence cube e.g. for detecting and/or imaging molecules, includes housing and combination of exciter filter and dichroic mirror/beam splitter.
DC J04 S03 S05
IN BARBERA-GUILLEM, E
PA (BIOC-N) BIOCRYSTAL LTD
CYC 94
PI WO 2001029532 A2 20010426 (200134)* EN 35p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
US 6252664 B1 20010626 (200138)
AU 2001012008 A 20010430 (200148)
ADT WO 2001029532 A2 WO 2000-US28336 20001013; US 6252664 B1 US 1999-419134 19991015; AU 2001012008 A AU 2001-12008 20001013
FDT AU 2001012008 A Based on WO 200129532
PRAI US 1999-419134 19991015
AB WO 200129532 A UPAB: 20010620
NOVELTY - A fluorescence cube includes a housing, an exciter filter and either a dichroic mirror or a beam splitter. The exciter filter allows passage of incident light comprising spectrum within 200-400 nm. The dichroic mirror reflects the incident light and transmits light comprising emitted light in desired directions. The transmitted light comprises spectrum within 415-800 nm.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of using the fluorescence cube involving fluorescence **labeling** of a substrate with species of water-soluble nanocrystals and imaging the **labeled** substrate with a detection system comprising the fluorescence cube. Imaging of the **labeled** substrate is performed by exposing the **labeled** substrate to an incident light comprising an excitation spectral range, and detecting transmitted light comprising an emission spectral range.

USE - For providing true color fluorescence images of fluorescent-**labeled** substrates. It is used in detection and/or imaging of molecules and/or biological processes in scientific and medical application. In medicine, it is used in assessing tissues, disease process affecting tissue, and disease state of affected tissue. In pharmaceutical

industry, it is used to monitor the distribution of drug in target organ or tissue, the interaction of the drug within the organ or tissue, the internalization of the drug by tissue cells, and the metabolism or bio clearance of the drug in living tissues.

ADVANTAGE - The fluorescence cube is capable of acquiring fluorescence spectra generated by a combination of different water-soluble semiconductor nanocrystals used together in multicolor fluorescence analysis of a **labeled** substrate. It is also capable of acquiring fluorescence spectra from all pixels of a field of view, and thus can simultaneously detect in a single measurement the locations in a substrate of **labeled** affinity ligands. Its use can save time, effort, and expense. It eliminates the need for false color imaging, and the need to sequentially acquire images one emission spectrum at a time.
Dwg.0/3

L12 ANSWER 6 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-316416 [33] WPIDS
DNC C2001-097514
TI Novel isolated polypeptide having physical and chemical properties of Renilla reniformis or Renilla kollikeri, and nucleic acids encoding them, useful as a marker of protein localization and/or gene expression.
DC C06 D16
IN WARD, W W
PA (RUTF) UNIV RUTGERS STATE NEW JERSEY
CYC 93
PI WO 2001032688 A1 20010510 (200133)* EN 56p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001014468 A 20010514 (200149)
ADT WO 2001032688 A1 WO 2000-US29976 20001030; AU 2001014468 A AU 2001-14468 20001030
FDT AU 2001014468 A Based on WO 200132688
PRAI US 2000-223805P 20000808; US 1999-162584P 19991029; US 2000-213093P 20000621
AB WO 200132688 A UPAB: 20010615
NOVELTY - An isolated polypeptide (I) having an amino acid sequence that confers upon the polypeptide physical and biochemical properties of a green fluorescent protein (GFP) from Renilla reniformis or Renilla kollikeri, and which substantially has a fully defined sequence of 237 amino acids (S1) as given in the specification, is new.

DETAILED DESCRIPTION - (I) has an amino acid sequence that confers upon the polypeptide physical and biochemical properties of a green fluorescent protein (GFP) from Renilla reniformis or Renilla kollikeri.

(I) substantially has a fully defined sequence of 237 amino acids (S1) as given in the specification, where Xaa at position 124 (Xaa 124) is Tyr or conservative substitution, Xaa125 is Lys or Arg, Xaa126 is Gly or conservative substitution, Xaa127 is Asn or Ser, Xaa128 is Lys or absent, Xaa129 is Asp, Gly130 is Leu or Pro, Xaa131 is Arg or Pro, Xaa132 is Glu, Arg, Leu, Ser or Asp, Xaa162 is Cys, Trp or Thr, Xaa217 is Thr or Glu, Xaa218 is Thr or Gly, Xaa235 is Glu or conservative substitution or alternatively absent, Xaa236 is Met or conservative substitution or alternatively absent, Xaa237 is Val or conservative substitution or alternatively absent.

INDEPENDENT CLAIMS are also included for the following:

(1) a variant of (I), having an excitation or emission **spectra** that is different from the excitation or emission

spectra of a native GFP from R.reniformis or R.kollikeri;

(2) an isolated or synthesized nucleic acid molecule (II) which encodes (I);

(3) isolated antibodies (III) which specifically recognize and bind antigenic epitopes of Renilla GFP;

(4) an antibody-GFP complex comprising noncovalent interaction between an antibody specific for Renilla GFP and the GFP recognized by the antibody;

(5) a fusion protein comprising an antibody or its functional portion, and a GFP;

(6) a GFP standard (IV) comprising a composition of Renilla GFP with known physical, biochemical and biophysical properties;

(7) a kit for calibration of fluorescence-based instruments and assays comprising the (IV) and optionally, one or more of:

(a) a series of concentrations of (IV);

(b) a certificate of quality control indicating batch and control numbers, concentrations of the standards and biophysical data about the standards; and

(c) instructions for use of the kit to calibrate fluorescence-based instruments and biological assays; and

(8) an oligonucleotide (V) for use as a primer or in screening or cloning new GFP-related molecules, comprising a nucleotide sequence derived from a nucleic acid molecule which comprises a fully defined sequence of 780 nucleotides (S2) as given in the specification and encoding the amino acid sequence of (S1).

USE - (IV) is used as a standard for calibration of instruments such as high-throughput screening monitors, fluorometers, fluorescence microscopes, fluorescence **detectors**, fluorescence activated cell sorters, flow cells, flow monitors, fluorescence spectrometers, fluorescence polarization instruments, X-ray fluorescence instruments, fluorescence **imaging** instruments, ratio fluorescence instruments, spectrofluorometers, fluorescence scanners, fluorescence-based microparticle readers, fluorescence-based nucleic acid sequencing systems, laser- and laser diode-based fluorescence instruments, and charge-coupled device (CCD)-based fluorescence instruments.

(IV) is also useful for calibrating fluorescence-based biological assays, maintaining the instrument in proper calibration by checking periodically with the GFP standard, comparing each assay or batch of assays performed with assay standard curve, referring to the assay standard curve for accurate quantitation of the assay and including internal controls with each assay or batch of assays by adding a known amount of the GFP standard to an assay sample.

(I) is useful for reducing background noise and optimizing signal in fluorescence-based biological assays, using polychromatic filters to ensure that light of the proper wave lengths can be selected for the assay, determining one or more optimum wavelengths for excitation and emission measurement based on the maximum light emitted from the sample versus the lowest amount of quenching, interference and nonspecific absorption from assay components and using a standard GFP for comparison and to determine loss of signal, quenching and energy transfer efficiency (claimed).

(II) may be used as probes to detect the presence of and/or expression of GFP genes and as probes to identify related genes from other Renilla species or from other anthozoan coelentrates. The GFP coding sequence can also be used as a reporter protein in transgenic cell or organism. The GFP coding sequence is fused to the coding sequence of interest and transformed into a cell, and localization of a protein of interest is determined in vivo using the fluorescence of the fused GFP protein. The GFP coding sequence linked to a promoter region of interest and termination sequences is used as a reporter gene to transform a cell.

These transgenic cells can be used to study the regulation of the promoter region in vivo or to trace cell lineage. The GFP nucleic acids are used to construct specific cell lines for cell-based diagnostics and thus can be used for screening drugs or organic chemicals. Renilla GFP is used in agricultural or environmental application as a reporter of plant stress, soil conditions or crop development using remote fluorescence detecting technologies. The purified GFP protein can be used as a **label** in many in vitro applications, as a marker protein, and to determine localization. The GFP may be linked chemically or genetically to antibodies, and can be used for determining localization of antigens in fixed and section cells, or in other immunological applications. The GFP may be linked to purified cellular proteins and used to identify binding proteins and nucleic acids in assays in vitro. The GFP proteins can be linked to nucleic acids for use in fluorescence in situ hybridization, and **labeling** probes in nucleic acid hybridization. Thus, GFP proteins or nucleic acids encoding GFP protein is used as marker of protein localization and/or gene expression. (III) is useful for purification and characterization of GFPs and its variants.

ADVANTAGE - (I) has an improved absorption **spectrum**, higher molar extinction coefficient and improved stability at high and low pH extremes, in 8 M urea, 6 M guanidine hydrochloride and 1% SDS. Renilla GFPs have near-transparent absorption window in the range of 320-390 nm which can be utilized to reduce background significantly and to greatly increase signal-to-noise ratio, allowing more sensitive detection in biological assays based on fluorescence detection.

Dwg.0/1

L12 ANSWER 7 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-289647 [30] WPIDS
DNN N2001-206855 DNC C2001-088623
TI Articles marked for identification, e.g. security bond paper, has luminescent **label** comprising optically stimulable glass.
DC L01 P83 T04
IN HUSTON, A L; JUSTUS, B L
PA (USNA) US SEC OF NAVY
CYC 1
PI US 6211526 B1 20010403 (200130)* 13p
ADT US 6211526 B1 US 1998-163332 19980930
PRAI US 1998-163332 19980930
AB US 6211526 B UPAB: 20010603

NOVELTY - An article marked for identification includes a luminescent **label** comprising optically stimulable glass.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for (A) a method of **labeling** an article involving providing a luminescent **label** coupled to the article and exposing the **label** to a radiation flux to populate metastable trapping centers in the **label**; and (B) reading the **label** on the article by exposing the **label** to a radiation flux of optical radiation to cause the **label** to luminesce.

USE - The **labeled** articles are used as security bond paper for bonds, stock certificates, or currency; articles of clothing; articles with recorded information, such as computer disks and tapes, compact disks, compact disk-read only memory, videotapes, as a source of verification system; and other manufactured articles.

ADVANTAGE - The invention has a combination of prompt fluorescence with a lifetime of microseconds and a phosphorescence that decays over a period of tens of seconds to minutes. It has a much longer rapid fadeout than fluorescent materials of the prior art. The metastable traps of different OSL glasses decay over different time scales (days to weeks to months). Each of these may be determined with precision and used to

measure the time since excitation. Combinations of different types of glasses with different decay rates permit additional flexibility in methods. The luminescent colors are produced in a wide range, making color coding possible.
Dwg.0/6

L12 ANSWER 8 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-101583 [11] WPIDS
CR 1999-120169 [10]
DNN N2001-075359 DNC C2001-029558
TI Acquiring, sorting and displaying **spectral** information from several microscopic objects, to identify biological cells and defects or alterations of them, comprises using digital **imaging detectors**.
DC B04 D16 S03
IN YANG, M M
PA (KAIR-N) KAIROS SCI INC
CYC 1
PI US 6160617 A 20001212 (200111)* 21p
ADT US 6160617 A Cont of US 1995-562272 19951122, US 1999-229462 19990112
FDT US 6160617 A Cont of US 5859700
PRAI US 1995-562272 19951122; US 1999-229462 19990112
AB US 6160617 A UPAB: 20010224
NOVELTY - Acquiring, sorting and displaying **spectral** information from several microscopic objects, comprising acquiring at least one **spectrum** from each object within the field of view of a digital **imaging detector**, sorting the **spectra** according to a selected criterion, and displaying the sorted **spectra**, is new.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for acquiring and displaying **spectral** information for each pixel of a digital image, comprising:
(a) acquiring a series of digital images taken at multiple wavelengths, each image comprising several pixels which encompass a microscopic region less than 2 microns in size;
(b) combining the images in stacks of spatially registered images;
(c) determining a **spectrum** for each set of spatially registered pixels in the stacks;
(d) sorting the **spectra** according to a selected criterion; and
(e) displaying the sorted **spectra**.
USE - The **spectral** information can be used to identify biological cells, microorganisms or components of biological cells, to identify defects, alterations, acid-base properties of physical characteristics (e.g. temperature, pressure, humidity, vitrification or shocking) of nonbiological materials, to visualize protein or DNA adducts, or to standardize and enhance histological staining procedures (claimed).
Dwg.0/7

L12 ANSWER 9 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-499130 [44] WPIDS
DNN N2000-369976 DNC C2000-149780
TI Confocal scanning beam microscope for DNA sequencing, has detector array for recording image acquired corresponding to two points on sample plane and spectral resolution on separate axes.
DC J04 S02 S03
IN SIMON, J D; STIMSON, M J
PA (UYDU-N) UNIV DUKE
CYC 23
PI WO 2000042417 A1 20000720 (200044)* EN 47p

RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: AU CA JP
AU 2000028455 A 20000801 (200054)
US 6134002 A 20001017 (200054)
EP 1117987 A2 20010725 (200143) EN
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
ADT WO 2000042417 A1 WO 1999-US30863 19991223; AU 2000028455 A AU 2000-28455 19991223; US 6134002 A US 1999-229874 19990114; EP 1117987 A2 EP 1999-969290 19991223, WO 1999-US30863 19991223
FDT AU 2000028455 A Based on WO 200042417; EP 1117987 A2 Based on WO 200042417
PRAI US 1999-229874 19990114
AB WO 200042417 A UPAB: 20000913
NOVELTY - The microscope has an optical system to acquire two points along a scan pattern on a sample plane (414). A detection arm (418) is placed in the path of light from the sample plane. A spectrometer (428) with a **detector** array (432) at its rear side receives the light. The image corresponding to two points and their **spectral** resolution are recorded on two axes of the **detector**.

DETAILED DESCRIPTION - The two points on the sample plane include regions of the sample represented by two pixels. A cylindrical lens (426) focuses the light from the sample towards the spectrometer silt.

An INDEPENDENT CLAIM is also included for a **spectrally** resolved confocal images acquisition method.

USE - For use as a laboratory analytical tool for biological and medical fields. For cell and DNA investigation in genetic sequencing. Also indirectly used for developing new pharmaceuticals and manufacturing new surgical equipment.

ADVANTAGE - Projects light from a region of a sample plane corresponding to at least two image pixels along one axis of a 2D **detector** array and uses a spectrometer to disperse the **spectra** of regions composite pixels along the other axis of the **detector** array. Reduces acquisition time to **spectrally** resolve confocal image using direct projection like scan **spectral** **imaging** confocal microscope. Enables rapid detection and acquisition of fluorescence emitted from fluorescence **labeled** samples separated by micro-capillary electrophoresis.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic explanatory drawing of a line-scanning confocal microscope.

Sample plane 414
Detection arm 418
Cylindrical lens 426
Spectrometer 428
Detector array 432
Dwg.4/7

L12 ANSWER 10 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-491197 [43] WPIDS
DNN N2000-364524 DNC C2000-147678
TI Hyperspectral fluorescent imaging system, used to detect nucleic acids bound to solid phase, e.g. for sequencing, comprises light source, optics, imaging spectrometer and detector.
DC B04 D16 S03
IN BODGANOV, V
PA (ORCH-N) ORCHID BIOSCIENCES INC
CYC 85
PI WO 2000043752 A1 20000727 (200043)* EN 51p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU

LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR
TT UA UG UZ VN YU ZA ZW
AU 9955770 A 20000807 (200055)
ADT WO 2000043752 A1 WO 1999-US19041 19990819; AU 9955770 A AU 1999-55770 19990819, WO 1999-US19041 19990819
FDT AU 9955770 A Based on WO 200043752
PRAI WO 1999-US19041 19990819
AB WO 200043752 A UPAB: 20000907
NOVELTY - A hyperspectral (complete **spectrum**) fluorescent **imaging** apparatus (A) for microarray detection comprising a light source emitting a transmission beam, expansion, focusing and collection lenses, an **imaging** spectrometer and a **detector**, is new.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for hyperspectral **imaging** of a fluorescently **labeled** nucleotide analog (I), using (A).
USE - (A) is used for multi-dye/base detection of nucleic acids coupled to a solid support, particularly for nucleic acid sequencing, primer extension genotyping or differential display, e.g. for detecting disease-associated mutations, for studying gene expression and function, for analyzing polymorphisms and for DNA fingerprinting.
ADVANTAGE - (A) provides very sensitive, rapid and inexpensive analysis of primer extension arrays and can distinguish **spectrally** between four different **labels** on high-density microarrays. Heterozygous mutations are identified accurately and both strands of a target nucleic acid may be sequenced to reduce potential miscalling. Apart from the translation stage, (A) has no moving parts and it does not require expensive optical systems. Unlike gel-based methods, the process requires only very small amounts of reagents and limited purification, and many oligonucleotides in an array can be hybridized simultaneously.
DESCRIPTION OF DRAWING(S) - Schematic illustration of the apparatus.
Light source 1
Expansion lenses 2,3
Focusing lens 4
Nucleic acid microchip 10
Collection lens 6
Imaging spectrometer 8
Detector 9
Dwg.0/1

L12 ANSWER 11 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-194332 [17] WPIDS
CR 1996-518698 [51]; 2000-125574 [11]
DNN N2000-143737 DNC C2000-060192
TI Apparatus for automated high capacity concurrent analysis of multiple DNA samples, etc. electrophoretically separates samples concurrently and groups their emissions spectrally and spatially.
DC B04 D16 J03 J04 S03
IN ROTHBERG, J M; SIMPSON, J W; WENT, G T
PA (CURA-N) CURAGEN CORP
CYC 1
PI US 6017434 A 20000125 (200017)* 45p
ADT US 6017434 A US 1995-438231 19950509
PRAI US 1995-438231 19950509
AB US 6017434 A UPAB: 20000405
NOVELTY - Apparatus has an electrophoretic device (104) concurrently separating biopolymer fragments within samples, a second device (102) simultaneously stimulating light emissions from the fragments and a third device (100) grouping in terms of their **spectral** and spatial components.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following: (a) The above apparatus where the first device is an electrophoresis module and the third device is a transmission **imaging** spectrograph forming the emissions into adjustable groups. A processor matches the grouped signals event prototype(s). (b) As (a) where the samples contain DNA fragments. In one aspect the fragments are **labelled** with dyes. (c) The above apparatus has a loading device supplying the samples to the electrophoretic device. (d) As (a) where the electrophoretic module has channels (107) defined by a flat bottom plate and a grooved top plate. The spectrograph has an optic assembly and a **detector** array. (e) As (d) where cross lane grooves and electrodes (116, 118) (116, 118) in the module causing the fragments to migrate between the channels. (f) As (d) where the grooves are formed in an insulating layer on the top plate. (g) As in (d) where the samples are loaded into a separating medium containing polystyrene beads. (h) The above apparatus or as (d) where the optic assembly has collection and focussing lenses. (i) As (d) and having a temperature control unit (108) for the module and the processor stores data on the distinctive **spectral** characteristics of dye **labels**. (j) As (c) where the loading device has a solid phase comb to whose teeth the fragments adhere and notches in the electrophoretic device guide the comb towards wells containing a separating medium. (k) As (j) where the comb teeth has DNA sequencing templates to which the fragments adhere. (l) As (a) and (c) where the processor compares the time behaviour of the time series of **spectral** samples with that of known prototypes.

USE - Automated high capacity concurrent analysis of multiple DNA samples, etc.

Dwg.1/19

L12 ANSWER 12 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-182456 [16] WPIDS
DNN N2000-134598 DNC C2000-057098
TI Device for the detection of species with native fluorescence or species **labeled** with one or several fluorophores.
DC B04 D16 J04 S03
IN HANNING, A; ROERAADE, J
PA (HANN-N) HANNING INSTR AB; (RBSC-N) R & B SCI AB
CYC 30
PI WO 2000004371 A1 20000127 (200016)* EN 46p
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: AU BR CA CN CZ HU JP PL RU TR US
AU 9955399 A 20000207 (200029)
EP 1097370 A1 20010509 (200128) EN
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
BR 9912825 A 20010502 (200129)
CZ 2001000196 A3 20010613 (200138)
ADT WO 2000004371 A1 WO 1999-SE1278 19990715; AU 9955399 A AU 1999-55399 19990715; EP 1097370 A1 EP 1999-941926 19990715, WO 1999-SE1278 19990715; BR 9912825 A BR 1999-12825 19990715, WO 1999-SE1278 19990715; CZ 2001000196 A3 WO 1999-SE1278 19990715, CZ 2001-196 19990715
FDT AU 9955399 A Based on WO 200004371; EP 1097370 A1 Based on WO 200004371; BR 9912825 A Based on WO 200004371; CZ 2001000196 A3 Based on WO 200004371
PRAI SE 1998-2558 19980716
AB WO 200004371 A UPAB: 20000330
NOVELTY - A device for detection of fluorescent species contained in a conduit medium comprises an exciting mechanism to excite the species by light. The medium and conduit make up a structure transparent to the exciting and emitted fluorescent light. Part of the emitted fluorescent light is guided away from the illumination zone by total internal reflection in the structure and collected.

USE - The device is used for detection of species with native fluorescence or species **labeled** with one or several fluorophores. The device may also be used in a method involving the transport of the species across the illumination zone within the conduit. The device is used for detection in connection with capillary electrophoresis, including capillary zone electrophoresis, capillary gel electrophoresis, micellar electrokinetic capillary chromatography, and capillary isoelectric focusing, capillary electrochromatography, liquid chromatography, or flow injection analysis, and in connection with nucleic acid analysis and DNA sequencing. (All claimed).

ADVANTAGE - The invention offers simplicity and robustness with respect to mechanics, optics and liquid handling, as well as high light collection efficiency, low stray light and easy adaptability to capillary array detection.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic view of the light guiding structure.

Conduit 1

Medium 2

Illumination zone 3

Light collection end 4

Dwg.11/15

L12 ANSWER 13 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-053626 [04] WPIDS
DNN N2000-041771 DNC C2000-014044
TI Three-dimensional optical storage of data.
DC D16 L03 T03 U14 W04
IN MEDVEY, B
PA (MEDV-I) MEDVEY B
CYC 86
PI WO 9962070 A1 19991202 (200004)* EN 33p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW
HU 9801249 A2 20000128 (200015)
AU 9941589 A 19991213 (200020)
ADT WO 9962070 A1 WO 1999-HU42 19990526; HU 9801249 A2 HU 1998-1249 19980528; AU 9941589 A AU 1999-41589 19990526
FDT AU 9941589 A Based on WO 9962070
PRAI HU 1998-1249 19980528
AB WO 9962070 A UPAB: 20000124

NOVELTY - Three-dimensional storage of data, including data writing and reading uses a medium switched between 2 stable states by controlling duration or wavelength of excitation. Data writing is effected by switching to a state within memory cells of storage medium. Data readout is done by detecting momentary state of medium within the cells by subjecting memory cell to excitation during writing.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an apparatus for three-dimensional storage of data having a three-dimensional optical storage medium divided into several memory cells, where an optical property of the storage medium may be switched by illumination between two stable states and switching is controlled by controlling the duration, intensity or wavelength of illumination. Storage medium has illumination device and control device connected to it.

Illumination device comprises three light sources radiating in different directions where the light of each source reaches a memory cell.

The wavelength, intensity or light emanating from the illumination

device may be varied and light sources can be controlled such that all light sources simultaneously illuminates and/or reads one memory cell.

USE - The method is used for three-dimensional storage of data including data writing and data readout.

ADVANTAGE - A material for a fluorescent memory is homogeneous and transparent, so after writing to the storage medium it is possible to excite and to switch, and to read memory cells inside the storage medium so that memory is readable and writeable in three dimensions. The states of the memory cells may be determined directly by direct detection of the fluorescence emitted from the individual memory cells or its absence. Band filters in the detectors filter out exciting beams and transmit fluorescence only.

Dwg.0/5

L12 ANSWER 14 OF 14 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-050627 [05] WPIDS
CR 1999-008869 [01]; 2000-204877 [16]; 2001-475054 [44]
DNN N1997-041635 DNC C1997-016700
TI Imaging system for detecting **labelled** marker on sample on support - directs excitation radiation at sample causing **labelled** material to emit radiation of different wavelength which is collected and used to generate image.
DC B04 D16 J04 S03
IN FIEKOWSKY, P; FODOR, S P A; RAVA, R; STERN, D; TRULSON, M; WALTON, I
PA (AFFY-N) AFFYMETRIX INC
CYC 1
PI US 5578832 A 19961126 (199705)* 131p
ADT US 5578832 A US 1994-301051 19940902
PRAI US 1994-301051 19940902
AB US 5578832 A UPAB: 20010914

An appts. for **imaging** a sample (1500) located on a support comprises a body for immobilising the support. Excitation radiation from a source (1100) having a first wavelength is passed through excitation optics (1200) which causes it to excite a region on the sample. **Labelled** material in the sample emits a radiation (1300) that has a different wavelength. Collection optics image it onto a **detector** (1800) which generates a signal proportional to the amt. of radiation sensed. The signal represents an image associated with a series of regions from which the emission originated. A translator is used to allow the series of regions on the sample to be excited. A processor handles the signal to generate a two-dimensional image of the sample.

The excitation optics focus light to a line on the sample. Surface bound **labelled** targets fluoresce in response. The collection optics image the emission onto a linear array of light **detectors** . Using confocal techniques, only emission from the light's focal plane is imaged. Once a strip has been scanned, the data representing the one-dimensional image is stored. A multi-axis translational stage moves the device at constant velocity to continuously integrate and process data allowing the build-up of the two-dimensional image. The collection optics can direct the emission to a spectrograph which images an emission **spectrum** onto a two-dimensional array of light **detectors** . The system pref. includes auto-focusing to maintain the sample in the focal plane of the excitation light throughout the scanning. The system also includes a temp. controller. The translational stage, auto-focus and temp. controller are computer controlled.

USE - The system may be used to detect genetic diseases either from acquired or inherited mutations in an individual DNA, including cystic fibrosis, diabetes and muscular dystrophy, as well as acquired diseases such as cancer.

ADVANTAGE - The system creates a highly sensitive and resolved image

at a high speed.
Dwg.1/21

L13 ANSWER 1 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-064697 [06] WPIDS
DNN N2000-050753
TI Transmission electron microscope with magnetic imaging energy filter.
DC S03 V05
IN KRAHL, D; KUJAWA, S
PA (LEOE-N) LEO ELEKTRONENMIKROSKOPIE GMBH
CYC 26
PI EP 967630 A2 19991229 (200006)* DE 10p
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
DE 19828741 A1 19991230 (200007)
JP 2000030645 A 20000128 (200017) 8p
ADT EP 967630 A2 EP 1999-111296 19990610; DE 19828741 A1 DE 1998-19828741 19980627; JP 2000030645 A JP 1999-182405 19990628
PRAI DE 1998-19828741 19980627
AB EP 967630 A UPAB: 20000203
NOVELTY - The microscope has a magnetic deflection system (11-14) and a post-energy-filter projection system, with hexapoles (S1-S7) arranged at points within the deflection system. The dispersion plane (DA) or an achromatic image plane (BA) of the filter is selectably imaged onto a **detector** plane (19), and geometrically-**spectrally** corrected , via switching (15,16) of the excitation of selected hexapoles.
USE - None given.
ADVANTAGE - The microscope is suitable for both the **imaging** of energy-filtered object images or **diffraction** patterns as well as the **imaging** of a dispersion plane in a detection plane, for parallel registration of an energy **spectrum**.
DESCRIPTION OF DRAWING(S) - The drawing shows a sectional diagram of the microscope.
magnetic deflection system 11-14
switching control 15,16
achromatic image plane BA
dispersion plane DA
hexapoles S1-S7
Dwg.1/3

L13 ANSWER 2 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-471995 [44] WPIDS
DNN N1997-393507 DNC C1997-150137
TI Radiation evaluation device has detector elements - which comprise optical conductors which are optically pumped to amplify detected signals.
DC B04 D16 J04 K08 L01 S02 S03 V08
IN GROSS, K; KAUS, M; MAIER-BORST, W; SCHRENK, H; SINN, H; STEHLE, G; KLAUS, M
PA (DEKR-N) DEUT KREBSFORSCHUNGSZENTRUM
CYC 20
PI DE 19610538 A1 19970925 (199744)* 13p
WO 9735171 A1 19970925 (199744) DE 31p
RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: JP US
EP 888527 A1 19990107 (199906) DE
R: AT BE CH DE DK ES FR GB GR IE IT LI NL SE
JP 2000506613 W 20000530 (200033) 26p

US 6310352 B1 20011030 (200172)
ADT DE 19610538 A1 DE 1996-19610538 19960318; WO 9735171 A1 WO 1997-DE564 19970318; EP 888527 A1 EP 1997-918038 19970318, WO 1997-DE564 19970318; JP 2000506613 W JP 1997-533044 19970318, WO 1997-DE564 19970318; US 6310352 B1 WO 1997-DE564 19970318, US 1999-142950 19990326
FDT EP 888527 A1 Based on WO 9735171; JP 2000506613 W Based on WO 9735171; US 6310352 B1 Based on WO 9735171
PRAI DE 1996-19610538 19960318
AB DE 19610538 A UPAB: 19971113
Device for evaluating incident radiation (4) such as X- rays, -rays, ionising radiation, fluorescence, or residual light, has at least one **detector** (5), e.g. scintillator, or wave length converter, to change the incident radiation to photons which lie in the ultra-violet, visible or infrared **spectra**, and an optical amplifier, where the novelty is that the amplifier has optical conductors (1), the material of which is optically pumped (3) to amplify the scintillation light. Also claimed are uses for the above device.

USES - The claimed uses are:- in devices which employ one, or a combination of more than one, of:- nuclear magnetic resonance; positron emission tomography; single photon emission computed tomography; gamma camera; X-ray **imaging**, e.g. an X-ray tomography; X-ray **diffraction**; high-energy calorimetry; radiotherapy, eg. Linac, where the **detector** simultaneously controls the dose and monitors the effect; and for purposes such as radio-immuno assaying and bio

ADVANTAGES - The weakest signals can be detected, locally amplified, transmitted over a great distance, e.g. by CCD camera, for evaluation, and are not distorted by e.g. magnetic fields. Spatially separates the conversion location of X- and - rays, and by amplification, enables the optical signal to be further converted to an electric signal. Simpler and safer than known devices. Compact, efficient, and directionally selective. Economical to make.
Dwg.2/6

L13 ANSWER 3 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-118529 [11] WPIDS
DNN N1997-097676
TI Resolution measurement appts for imaging system, especially active matrix flat panel display - applies light beam to photographic facsimile along optical axis to produce **diffraction** pattern of line image.
DC S02 V05
IN LENGYEL, J M; MANER, R M; NELSON, L A
PA (HONE) HONEYWELL INC
CYC 1
PI US 5600432 A 19970204 (199711)* 13p
ADT US 5600432 A US 1994-263897 19940621
PRAI US 1994-263897 19940621
AB US 5600432 A UPAB: 19970313
The appts. includes a device responsive to the **imaging** system for providing a display of a line image at a predetermined angular orientation. A photographic facsimile of the line image is provided. A source (40) provides a light beam in the form of coherent light of a given wavelength. The beam defines an optical axis. A liquid optical gate (44) receives the light beam and the photographic facsimile and forms the **diffraction** pattern of the line image.

A converging thin lens (46) focuses a Fourier transformation of the **diffraction** pattern on a spatial frequency plane (P2). Spatial frequency components of the **diffraction** pattern are dispersed in a spatial light pattern. The amplitude and **spectral** distribution of the components vary in accordance with the geometry of the line image. Magnification optics (50) is focused upon the spatial frequency plane for

receiving the spatial light pattern, and reproducing an image as an output image having magnified features corresp. to its components. A **detector** receives the enlarged image and stores it in digital form.

ADVANTAGE - Enables generic measurement method, in spatial frequency domain, of resolution for any component of **imaging** system.

Dwg.3/8

L13 ANSWER 4 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-076940 [07] WPIDS
DNN N1997-063909
TI Compact spectrum analysing module - has output aperture that egress light from module with output direction being transverse to plane of incidence to **diffraction** grating.
DC S03
IN CHAU, C
PA (INST-N) INSTR INC SA
CYC 1
PI US 5589717 A 19961231 (199707)* 12p
ADT US 5589717 A Cont of US 1993-2597 19930111, US 1995-527290 19950912
PRAI US 1993-2597 19930111; US 1995-527290 19950912
AB US 5589717 A UPAB: 19970212

The analyser module includes an input mirror oriented at an angle to an input path to reflect the input beam toward a **diffraction** grating. The light beam travels from the input mirror to the **diffraction** grating in a plane of incidence to the **diffraction** grating. An output mirror is positioned to intercept light dispersed by the **diffraction** grating and reflect the dispersed light in an output direction. An output aperture is used for egress of light from the module. The output direction is transverse to the plane of incidence to the **diffraction** grating.

An input light reflected from the mirror (20) is analysed by a spectrograph **diffraction** grating (22) the reflected beam from which is provided to an output mirror (24). The latter outputs light through a rectangular window (26) to the exterior of the housing (12) where any **detector** such as a CCD array may be located.

USE/ADVANTAGE - As **spectrum** analyser module that may be incorporated into large instruments. Compact design while providing high quality of **imaging**.

Dwg.1/6

L13 ANSWER 5 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1996-011055 [01] WPIDS
DNN N1996-009470
TI Spectral analyser for optical light source using image detection - processes optical radiation via first mirror, two order sorting prisms and **diffraction** grating for separating spectral orders, second mirror and final detecting unit.
DC S03
IN LINDBLOM, P
PA (NOWO-N) NOW OPTICS AB; (LIND-I) LINDBLOM P; (MULT-N) MULTICHANNEL INSTR AB
CYC 24
PI WO 9531703 A1 19951123 (199601)* EN 53p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: AU CA CN JP KR RU US
SE 9401669 A 19951117 (199607)
SE 502809 C2 19960122 (199609)
AU 9525424 A 19951205 (199620)
EP 764262 A1 19970326 (199717) EN 53p

R: AT BE CH DE DK ES FR GB IE IT LI NL
US 5859702 A 19990112 (199910)
EP 764262 B1 20000802 (200038) EN
R: AT BE CH DE DK ES FR GB IE IT LI NL
DE 69518244 E 20000907 (200052)
ES 2151064 T3 20001216 (200105)
ADT WO 9531703 A1 WO 1995-SE543 19950515; SE 9401669 A SE 1994-1669 19940516; SE 502809 C2 SE 1994-1669 19940516; AU 9525424 A AU 1995-25424 19950515; EP 764262 A1 EP 1995-919724 19950515, WO 1995-SE543 19950515; US 5859702 A WO 1995-SE543 19950515, US 1997-737339 19970121; EP 764262 B1 EP 1995-919724 19950515, WO 1995-SE543 19950515; DE 69518244 E DE 1995-618244 19950515, EP 1995-919724 19950515, WO 1995-SE543 19950515; ES 2151064 T3 EP 1995-919724 19950515
FDT AU 9525424 A Based on WO 9531703; EP 764262 A1 Based on WO 9531703; US 5859702 A Based on WO 9531703; EP 764262 B1 Based on WO 9531703; DE 69518244 E Based on EP 764262, Based on WO 9531703; ES 2151064 T3 Based on EP 764262
PRAI SE 1994-1669 19940516
AB WO 9531703 A UPAB: 19960122
The appts. includes a **spectral detector** (1) with an entrance aperture (10) for the radiation of a light source (11), a first mirror (12) and a **diffraction** grating (14) for wavelength dispersion of the radiation. Order sorting prisms (131, 132) separate the **spectral** orders of the **diffraction** grating **spectra** and a detecting unit (16) registers the light source **spectrum** divided into order **spectra** after reflection by a second mirror (15).

The two order sorting prisms are manufactured from optically different material and together with the **diffraction** grating and the mirrors produce a substantially uniform distribution of the order **spectra** on the detecting unit.

USE/ADVANTAGE - For wavelengths in range from vacuum ultra violet and near infrared. Eliminates non-uniform distribution of **spectra** and astigmatic **imaging** of entrance aperture.
Dwg.1/4

L13 ANSWER 6 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1995-043645 [06] WPIDS
CR 1996-300091 [30]
DNN N1995-034223
TI Absorption and emission type Spectroscopic imaging device - provides wavelength selectivity using acousto-optic tunable filter or step scan interferometer and uses focal plane array detector as imaging device.
DC S03 U11 U14
IN LEVIN, I W; LEWIS, E N; TREADO, P J
PA (USSH) US DEPT HEALTH & HUMAN SERVICES
CYC 1
PI US 5377003 A 19941227 (199506)* 20p
ADT US 5377003 A Cont of US 1992-846824 19920306, US 1994-236655 19940429
PRAI US 1992-846824 19920306; US 1994-236655 19940429
AB US 5377003 A UPAB: 19960808
The spectroscopic **imaging** device includes a source of broadband light and a collimator for directing the broad-band light at an acousto-optic tunable filter, the tunable filter being optically tunable by applying an input signal of a selected frequency to the filter. A device is operatively connected to the acousto-optic tunable filter for applying the input signal to the acousto-optic tunable filter thereby selecting a near-infrared wavelength of the broadband light to be filtered by the acousto-optic tunable filter and passed through the acousto-optic tunable filter. The filtered light is then directed toward a subject to be

analysed.

A device is provided for directing light transmitted or reflected from each of several spatial locations within the subject in response to the filtered light impinging upon the subject at a focal plane array **detector** comprising a two-dimensional array of charge coupled devices. The charge coupled devices of the focal plane array **detector** measure the intensity of light transmitted or reflected from each of the spatial locations.

USE/ADVANTAGE- Non-invasively and rapidly collects images of sample at multiple, discrete wavelengths in ultraviolet, visible, near infrared and infrared regions of optical **spectrum**. Rapidly and simultaneously records and analyses thousands of absorption **spectra** with **diffraction** limited spatial resolution and high **spectral** resolution.

Dwg.1/11

L13 ANSWER 7 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1995-007595 [02] WPIDS
DNN N1995-006357
TI Monochromator, esp. for single beam spectrometer - has oscillating plane mirror for scanning output spectrum of **diffraction** grating to enable selection of monochrome wavelength.
DC S03
IN SCHMIDT, W
PA (SCHM-I) SCHMIDT W
CYC 2
PI DE 4317948 A1 19941201 (199502)* 9p
US 5497231 A 19960305 (199615)# 9p
DE 4317948 C2 19960725 (199634) 10p
ADT DE 4317948 A1 DE 1993-4317948 19930528; US 5497231 A US 1994-250710 19940526; DE 4317948 C2 DE 1993-4317948 19930528
PRAI DE 1993-4317948 19930528; US 1994-250710 19940526
AB DE 4317948 A UPAB: 19950117

A monochromatic source for a single beam spectrometer has an input aperture (1) through which white light from a suitable source is collimated by an achromatic lens (2) and the beam is reflected by a plane mirror (3) to a **diffraction** grating (4) whence its monochrome components are projected through an output aperture (6) via an achromatic **imaging** lens (5).

The mirror (3) is mounted on a spring steel arm (8) which is maintained in oscillation of adjustable frequency/amplitude by an EM coil (9) controlled by a **sensor** (11a, 11b) and an appropriate feedback circuit (not shown). The mirror (3) is thus able to scan the output **spectrum** of the grating (4) to enable wavelength selection of the emergent light.

USE/ADVANTAGE - Simply generates monochromatic light of required wavelength over full extent of **spectrum**.

Dwg.1/7

L13 ANSWER 8 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1994-083391 [10] WPIDS
DNN N1994-065112
TI Spectrometer for calibrating colour imaging appts. - uses optical slit and **diffraction** grating movable onto axis of polychromatic light from source to lens.
DC P82 S03 S06 W02
IN MILCH, J R
PA (EAST) EASTMAN KODAK CO
CYC 18
PI WO 9404959 A1 19940303 (199410)* EN 19p

RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: JP
US 5303028 A 19940412 (199414) 7p
EP 609428 A1 19940810 (199431) EN 2p
R: DE FR GB
JP 07500684 W 19950119 (199512) 1p
ADT WO 9404959 A1 WO 1993-US7801 19930817; US 5303028 A US 1992-933553 19920824; EP 609428 A1 EP 1993-920200 19930817, WO 1993-US7801 19930817; JP 07500684 W WO 1993-US7801 19930817, JP 1994-506525 19930817
FDT EP 609428 A1 Based on WO 9404959; JP 07500684 W Based on WO 9404959
PRAI US 1992-933553 19920824
AB WO 9404959 A UPAB: 19940421
The appts. comprises a source (12) for projecting polychromatic light along an optical axis (14) with a focusable lens (16) **imaging** a relatively narrow slit (18) of a member (20) onto a linear image **sensor** (22). The slit is orthogonal to the axis and is positioned in an object plane (17) of the lens. The source illuminates the slit through the lens and the slit is imaged through the lens generally onto only an on-axis pixel location (22a) of the **sensor**.

A **diffraction** grating (24) located at a given distance from the slit disperses the light according to its constituent wavelengths which after passing through the lens forms duplicate **spectra** across the **sensor**. The pixels of the **sensor** receive light energy corresp. to the off-axis positions, the repetition frequency of the grating, the light **spectral** content and the lens magnification.

ADVANTAGE - Provides a single calibration assembly in which the **diffraction** grating is easier to place between the colour image plane and the lens. The dimensions are stable and simplifies insertion of calibration assembly into colour **imaging** appts, and is easy to maintain correct orientation.

Dwg.1/4

L13 ANSWER 9 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1994-001068 [01] WPIDS
DNN N1994-000828
TI Colour image reading appts. for scanner or facsimile - has blazed **diffraction** grating in optical path between light receiver and imaging optical system.
DC P81 W02
IN NAKAI, T; SETANI, M
PA (CANO) CANON KK
CYC 6
PI EP 575869 A1 19931229 (199401)* EN 19p
R: DE FR GB IT
JP 06043387 A 19940218 (199412)
US 5362957 A 19941108 (199444) 17p
EP 575869 B1 19980318 (199815) EN 20p
R: DE FR GB IT
DE 69317471 E 19980423 (199822)
ADT EP 575869 A1 EP 1993-109560 19930615; JP 06043387 A JP 1992-193124 19920625; US 5362957 A US 1993-64875 19930524; EP 575869 B1 EP 1993-109560 19930615; DE 69317471 E DE 1993-617471 19930615, EP 1993-109560 19930615
FDT DE 69317471 E Based on EP 575869
PRAI JP 1992-193124 19920625
AB EP 575869 A UPAB: 19940217
The appts. has a light-receiver in which a number of line sensors are arranged on the same substrate. An imaging optical system forms an image on the light-receiver. A blazed **diffraction** grating is arranged

in an optical path between the imaging system and the light-receiver. It colour-separates a light beam from the object into a number of light components.

The grating has lines with at least two different grating heights. The grating may be divided into areas, with the grating height changed for each area. The grating pitch may be changed in correspondence with the change in height.

ADVANTAGE - Improved colour separation and colour reproducibility.

5A,6A/19

L13 ANSWER 10 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1993-305137 [39] WPIDS
DNN N1993-234734
TI **Spectral** response measurer for colour imager - displaces either optical **imaging** appts., light source or **sensor** to provide sweep of light **spectrum** at **sensor**.
DC W02
IN MELMAN, H Z
PA (SCIT-N) SCITEX CORP LTD
CYC 12
PI EP 562760 A1 19930929 (199339)* EN 20p
R: AT BE CH DE ES FR GB IT LI NL
JP 06062180 A 19940304 (199414)
IL 101375 A 19960119 (199616)
EP 562760 B1 19961120 (199651) EN 21p
R: AT BE CH DE ES FR GB IT LI NL
DE 69306021 E 19970102 (199706)
ADT EP 562760 A1 EP 1993-302051 19930318; JP 06062180 A JP 1993-67034 19930325; IL 101375 A IL 1992-101375 19920325; EP 562760 B1 EP 1993-302051 19930318; DE 69306021 E DE 1993-606021 19930318, EP 1993-302051 19930318
FDT DE 69306021 E Based on EP 562760
PRAI IL 1992-101375 19920325
AB EP 562760 A UPAB: 19931123
The **spectral** response measurer has a **diffraction** grating disposed between an object plane or an image plane. An optical aperture definer is located in the object plane. Either the light source, optical imager, light **sensor**, or optical aperture is displaced perpendicular to the optical axis.

The **diffraction** grating is between an **imaging** appts. and the object plane. The light source includes spot illumination. An optical device expands the spot illumination.

ADVANTAGE - For printer or copier. Avoids need to replace or remeasure input targets or references.

Dwg.2/13

L13 ANSWER 11 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1993-273022 [34] WPIDS
DNN N1993-209643
TI Optical inspection appts. for detection of microscopic contaminants on semiconductor wafers - uses spatial filter located at Fourier plane of light diffracted from substrate with paced opaque tracks blocking broadband source light.
DC P81 S03 U11
IN FEIN, M E; NEUKERMANS, A P; VAUGHT, J L
PA (TENC-N) TENCOR INSTR
CYC 20
PI WO 9316373 A1 19930819 (199334)* EN 29p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: DE GB JP KR
US 5264912 A 19931123 (199348) 14p

TW 243555 A 19950321 (199522)
JP 07503793 W 19950420 (199524) 11p
KR 246268 B1 20000401 (200124)
ADT WO 9316373 A1 WO 1993-US935 19930202; US 5264912 A US 1992-832379 19920207; TW 243555 A TW 1993-101442 19930227; JP 07503793 W JP 1993-514153 19930202, WO 1993-US935 19930202; KR 246268 B1 WO 1993-US935 19930202, KR 1994-702709 19940806
FDT JP 07503793 W Based on WO 9316373
PRAI US 1992-832379 19920207
AB WO 9316373 A UPAB: 19931119
The system for inspection of patterned wafers (10) includes a spatial filter (26) pref. a Fourier transform filter placed in the Fourier plane of light diffracted from the substrate in combination with a broadband illumination source. The substrate has a repetitive pattern of periodic features, as well as aperiodic contaminants and defects. The periodic features have a spacing diffracting light from the beam in a number of **spectral** lines found in a number of **spectral** dispersion orders. Each order of **spectral** lines forms an elongated band.

An aperture stop is disposed along the optical axis with the beam focused to pass through it and onto the periodic features of the substrate. The spatial filter (26) has a number of opaque tracks which block the bands of light but transmit light scattered from the aperiodic features. A two dimensional **imaging sensor** receives light transmitted through the spatial filter.

ADVANTAGE - Has anti-speckle characteristics.

Dwg.1/6

L13 ANSWER 12 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1993-220985 [28] WPIDS
DNN N1993-169360
TI High resolution fast **imaging** spectrograph for land and sea remote sensing - has three spherical mirrors, turning mirror and grating arranged with light **detector** onto which **spectral** image of object is projected.
DC S02 S03 W06
IN BRET, G G
PA (CHRO-N) CHROMEX INC; (CHRO-N) CHROMAX INC
CYC 6
PI EP 551241 A1 19930714 (199328)* EN 8p
R: DE FR GB SE
CA 2086864 A 19930709 (199339)
US 5305082 A 19940419 (199415) 7p
EP 551241 B1 19970528 (199726) EN 10p
R: DE FR GB SE
DE 69310940 E 19970703 (199732)
CA 2086864 C 19991130 (200016) EN
ADT EP 551241 A1 EP 1993-630001 19930107; CA 2086864 A CA 1993-2086864 19930107; US 5305082 A US 1992-819368 19920108; EP 551241 B1 EP 1993-630001 19930107; DE 69310940 E DE 1993-610940 19930107, EP 1993-630001 19930107; CA 2086864 C CA 1993-2086864 19930107
FDT DE 69310940 E Based on EP 551241
PRAI US 1992-819368 19920108
AB EP 551241 A UPAB: 19931116
The spectrograph has a first and second spherical mirror. An optical grating having an opening is positioned to receive and direct radiation from the first mirror to the second mirror. A turning mirror is positioned at the focus of the second mirror and a third spherical mirror receives radiation from the turning mirror.

Incoming radiation from an object positioned at the focus of the first mirror passes through the opening to illuminate the first mirror and

to form a spectral image on a light detection device.
ADVANTAGE - Enhanced spatial resolution is achieved whilst maintaining sufficient spatial resolution for a variety of applications including placement in narrow confines in an aircraft or satellite.Eg for earth science remote sensing for use in satellite or aircraft.
Dwg.3/7

L13 ANSWER 13 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1992-340358 [41] WPIDS
CR 1994-016197 [02]; 1995-021990 [03]
DNN N1992-259543
TI Airborne multiband imaging spectrometer - has scanner using rotating polygon and spectrometer with beam splitter in output optical path of collimating lens.
DC S02 S03 W06
IN CHANG, S; COLLINS, W F; WESTFIELD, M J; COLLINS, W E
PA (GEOP-N) GEOPHYSICAL ENVIRONMENTAL RES CORP; (GEOP-N) GEOPHYSICAL & ENVIRONMENTAL RES CORP
CYC 17
PI US 5149959 A 19920922 (199241)* 14p
EP 509770 A2 19921021 (199243) EN 15p
R: AT BE CH DE DK ES FR GB GR IT LI LU MC NL PT SE
EP 509770 A3 19930728 (199507)
EP 509770 B1 19950927 (199543) EN 21p
R: AT BE CH DE DK ES FR GB GR IT LI LU MC NL PT SE
DE 69205046 E 19951102 (199549)
ADT US 5149959 A US 1991-685614 19910415; EP 509770 A2 EP 1992-303362 19920415; EP 509770 A3 EP 1992-303362 19920415; EP 509770 B1 EP 1992-303362 19920415; DE 69205046 E DE 1992-605046 19920415, EP 1992-303362 19920415
FDT DE 69205046 E Based on EP 509770
PRAI US 1991-685614 19910415
AB US 5149959 A UPAB: 19950201
The imaging spectrometer comprises an optical image assembly including a wide angle rotating mirror having a set of relfective surfaces for providing a substantially continuous image with respect to time of radiant spectral emissions in a predetermined angular field of view. A first fixed mirror redirects the image of spectral emissions from the rotating mirror through an aperture to a collimating lens and through a further mirror to a spectrometer.
The spectrometer comprises a beam splitter, located in the output of the optical path of the collimating lens, which divides the spectral emissions into two contiguous bands having different predetermined wave lengths. A second fixed mirror is used to direct each of the bands to respective **diffraction** gratings. The **diffraction** gratings provide a predetermined angular dispersion of the spectral emissions at different predetermined wavelengths.
USE/ADVANTAGE - Low altitude low speed airborne applications to geophysical, geological and environmental surveys. Maximised detection threshold.
Dwg.1/9
Dwg.1/9

L13 ANSWER 14 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1992-270587 [33] WPIDS
DNN N1992-206837
TI High sensitivity multi-wavelength spectral analyser - has optical system of high luminosity with two dimensional detector including collimator lens and reflection **diffraction** grating.
DC S03

IN ICHIMURA, T; INABA, F; NAGOSHI, T; NOGOSHI, T
PA (ICHI-I) ICHIMURA T; (NAGO-I) NAGOSHI T; (SHKJ) RES DEV CORP JAPAN
CYC 4
PI EP 498644 A1 19920812 (199233)* EN 27p
R: DE FR GB
US 5329353 A 19940712 (199427) 25p
EP 498644 B1 19951213 (199603) EN 28p
R: DE FR GB
DE 69206641 E 19960125 (199609)
ADT EP 498644 A1 EP 1992-300991 19920206; US 5329353 A US 1992-832475 19920207; EP 498644 B1 EP 1992-300991 19920206; DE 69206641 E DE 1992-606641 19920206, EP 1992-300991 19920206
FDT DE 69206641 E Based on EP 498644
PRAI JP 1991-15628 19910207
AB EP 498644 A UPAB: 19931006
The spectral analyser comprises a spectroscope (1) which includes an entrance slit (2), a collimator lens (3) of high luminosity, a reflection **diffraction** grating (4) and an imaging lens (5) with a photodetector (6) disposed at its image plane (P). Radiation from the sample S is diffracted such that:

sini + sinbeta = m(lamda)/d,

where i is angle of incidence, beta is angle of **diffraction**, lamda is wavelength, m is **diffraction** order and d is the grating spacing.

A spectral image is formed on the photodetector such that analysis of its output yields coordinates of each image point and image intensity at the point, making spectral measurements of weak radiation possible.

ADVANTAGE - Simultaneously obtains spectral distribution of extremely weak radiation such as bio-luminescence, chemiluminescence caused by excitation light, without needing wavelength scanning.
1/15

L13 ANSWER 15 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1992-201005 [25] WPIDS
DNN N1992-152091
TI Multichannel spectrometer, for pigment investigation - contains lens, aperture stop and **diffraction** grid, simultaneously forms re-emission spectra of skin point and white standard.
DC P31 S03 S05
IN MARTENS, G
PA (PHIG) PHILIPS PATENTVERWALTUNG GMBH; (PHIG) PHILIPS GLOEILAMPENFAB NV; (PHIG) PHILIPS ELECTRONICS NV; (PHIG) US PHILIPS CORP
CYC 4
PI DE 4039070 A 19920611 (199225)* 5p
EP 490428 A2 19920617 (199225) DE
R: DE FR GB
EP 490428 A3 19920826 (199337)
US 5297555 A 19940329 (199412) 5p
EP 490428 B1 19960313 (199615) DE 7p
R: DE FR GB
DE 59107547 G 19960418 (199621)
ADT DE 4039070 A DE 1990-4039070 19901207; EP 490428 A2 EP 1991-203155 19911203; EP 490428 A3 EP 1991-203155 19911203; US 5297555 A US 1991-803313 19911202; EP 490428 B1 EP 1991-203155 19911203; DE 59107547 G DE 1991-507547 19911203, EP 1991-203155 19911203
FDT DE 59107547 G Based on EP 490428
PRAI DE 1990-4039070 19901207
AB DE 4039070 A UPAB: 19940510
The multichannel spectrometer contains an evaluation and display device and an optical arrangement for detecting and forming images of re-emission

spectra of a skin surface on an evaluatable image plane taking account of a white standard (17). The optical arrangement contains a lens system (18, 21, 22) directed towards the skin surface and white standard and an aperture stop (19) followed by a **diffraction** grid (23) aligned according to the aperture (20).

It simultaneously produces the re-emission spectrum of a point on a defined line on the skin surface and of the white standard in the image plane (x, y) following the grid.

ADVANTAGE - Enables contactless detection of different re-emission spectra whilst continuously taking account of primary light correction. Dwg.1

L13 ANSWER 16 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1991-163843 [22] WPIDS
DNN N1991-125580 DNC C1991-070874
TI Multi-spectral X-ray spectroscopic telescope - giving multiple high spatial resolution spectral images of solar and stellar X-ray and extreme UV sources.
DC K08 P81 S03
IN HOOVER, R B
PA (USAS) NAT AERO & SPACE ADMIN
CYC 1
PI US 5016265 A 19910514 (199122)*
US 545089 A0 19910423 (199123)
ADT US 5016265 A US 1990-545089 19900628; US 545089 A0 US 1990-545089 19900628
PRAI US 1990-545089 19900628; US 1985-765979 19850815
AB US 5016265 A UPAB: 20011211
A variable magnification variable dispersion glancing incidence x-ray spectroscopic telescope capable of multiple high spatial revolution **imaging** at precise **spectral** lines of solar and stellar x-ray and extreme ultraviolet radiation sources, includes a primary optical system which focuses the incoming radiation to a primary focus. Two or more rotatable carriers each provide a different magnification and are positioned behind the primary focus at an inclination to the optical axis. Each carrier carries a series of ellipsoidal **diffraction** grating mirrors each having a concave surface on which the gratings are ruled and coated with a multilayer coating to reflect by **diffraction** a different desired wavelength.

The **diffraction** grating mirrors of both carriers are segments of ellipsoids having a common first focus coincident with the primary focus. A contoured **detector** such as an x-ray sensitive photographic film is positioned at the second respective focus of each **diffraction** grating so that each grating may reflect the image at the first focus to the **detector** at the second focus.

The carriers are selectively rotated to position a selected mirror for receiving radiation from the primary optical system, and at least the first carrier may be withdrawn from the path of the radiation to permit a selected grating on the second carrier to receive radiation. @(16pp Dwg.No.2/8)@

L13 ANSWER 17 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1991-132978 [18] WPIDS
DNN N1991-102119
TI Light receiver e.g. for optical CT image forming device - detects transmitted image from scattering component by extracting beat component of combined light from specimen and reference.
DC S03
IN ICHIMURA, T; INABA, F; TOIDA, M
PA (SHKJ) RES DEV CORP JAPAN; (ICHI-I) ICHIMURA T; (INAB-I) INABA F; (TOID-I) TOIDA M

CYC 13
PI WO 9105239 A 19910418 (199118)*
RW: AT BE CH DE DK ES FR GB IT LU NL SE
W: US
EP 445293 A 19910911 (199137)
R: DE FR GB
US 5249072 A 19930928 (199340) 28p
EP 445293 A4 19920603 (199522)
EP 445293 B1 19970813 (199737) EN 34p
R: DE FR GB
DE 69031268 E 19970918 (199743)
ADT EP 445293 A EP 1990-908662 19900530; US 5249072 A WO 1990-JP694 19900530, US 1991-689883 19910524; EP 445293 A4 EP 1990-908662 ; EP 445293 B1 EP 1990-908662 19900530, WO 1990-JP694 19900530; DE 69031268 E DE 1990-631268 19900530, EP 1990-908662 19900530, WO 1990-JP694 19900530
FDT US 5249072 A Based on WO 9105239; EP 445293 B1 Based on WO 9105239; DE 69031268 E Based on EP 445293, Based on WO 9105239
PRAI JP 1989-250036 19890926
AB WO 9105239 A UPAB: 19930928
A transmitted light generated when a beam from a laser source (01) is applied to a specimen is combined with a laser beam from a local oscillation source (02) whose frequency is different from that of the applied laser beam through a half mirror (03). The combined light is received by a light receiving element (04) that restricts each division area to not larger than a minimum space resolution unit where an interference between different points is generated when the propagation area of light is divided to generate a Fraunhofer **diffraction** image.

The whole or part of the Fraunhofer **diffraction** image of the zero order, or a **diffraction** image up to n times the zero order spectrum are detected by a photosensor (05). Since the transmitted image can be separated from a scattering component and detected by extracting the beat component of the combined light, and information on an absorber can be obtained even when the scattering component is large such as with light passed through a specimen of an organism.
1/30

L13 ANSWER 18 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1990-334997 [44] WPIDS
DNN N1990-256045
TI Spatial heterodyne spectrometer for analysing EM radiation - produces collimated electromagnetic beam received by two beam dispersive interferometer output which is fourier transformed.
DC S03
PA (WISC) WISCONSIN ALUMNI RES FOUND
CYC 15
PI WO 9012294 A 19901018 (199044)*
RW: AT BE CH DE DK ES FR GB IT LU NL SE
W: JP
EP 422183 A 19910417 (199116)
R: AT BE CH DE ES FR GB IT LI LU NL SE
US 5059027 A 19911022 (199145)
JP 04500128 W 19920109 (199208)
EP 422183 A4 19920805 (199523)
ADT EP 422183 A EP 1990-906498 19900404; US 5059027 A US 1989-336068 19890411; JP 04500128 W JP 1990-513164 19900404; EP 422183 A4 EP 1990-906498
PRAI US 1989-336068 19890411
AB WO 9012294 A UPAB: 19930928
The spectrameter analyzes electromagnetic radiation. The radiation is collimated and then received by a dispersive two beam interferometer (25)

which then produces an output beam. This beam is composed of two beams formed from the input beam and recombined such that the angle between the wavefronts of the beams is directly related to the deviation of the wavelength from a selected mill wavelength at which the wavelengths are parallel.

The output beam is imaged outer an imaging detector (34). The image's intensity is Fourier transformed to determine the spatial frequency frequency content of the image.

ADVANTAGE - Has throughput 200 times larger than grating spectrometer operating of similar resolutions. @
1/13@

L13 ANSWER 19 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1990-082913 [11] WPIDS
DNN N1990-063917
TI Spectrophotometer e.g. for printing or colour matching - uses non-collimated light and linear detector array of CCD(s), sample being analysed using **diffraction** grating.
DC S03 T04 T05
IN GRANGER, E M
PA (EAST) EASTMAN KODAK CO
CYC 1
PI US 4895445 A 19900123 (199011)* 16p
ADT US 4895445 A US 1988-270728 19881114
PRAI US 1987-66284 19870625; US 1988-270728 19881114
AB US 4895445 A UPAB: 19930928
The spectrophotometric equipment may be arranged in transmission or reflection mode and uses non-collimated light: this means that a linear **spectrum** is obtained at the **detector** array. The equipment is arranged in relfection mode. The chassis (13) is carried on rollers (15,19) which allow it to be moved over the surface of the sample (21).

Light from a tungsten-halogen lamp (45) is directed onto the sample by a reflector (35): reflected light from the sample is directed by flat mirror (49) through a collecting lens (51) a flare stop (53) to a **diffraction** grating (55) - in this case a reflection grating though a transmission grating could be used. Diffracted light is focussed (as a linear **spectrum**) by an **imaging** lens (57) onto a **detector** array (59). USE/ADVANTAGE - In graphic arts (printing), colour matching, detection of forgeries, identification of badges and passes etc. Does not need collimating lens or special image processing electronics.
1/7

L13 ANSWER 20 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1985-101216 [17] WPIDS
DNN N1985-075957
TI Acousto optic spectrum analyser - uses electron multiplier imaging device between photodiode array and transform lens.
DC S01
IN JOYNES, G M S
PA (PLES) PLESSEY CO PLC
CYC 1
PI GB 2146766 A 19850424 (198517)* 4p
GB 2146766 B 19861022 (198643)
ADT GB 2146766 A GB 1984-22284 19840904
PRAI GB 1983-24583 19830914; GB 1984-22284 19840904
AB GB 2146766 A UPAB: 19930925
The acousto-optic spectrum analyser comprises a light source (1) the light from which is collimated by a convex lens (2) before being fed into a

Bragg cell (4) which includes of piezo-crystal (5) for converting incoming electrical signals into acoustic signals travelling in an optically transparent medium. The periodic strains in the transparent medium creats in effect, a **diffraction** grating (3) which produces spatially varying modulation of the collimated light beam from the light source (1).

A lens (6) converts the spatial modulation into a spatial Fourier transform in its back focal plane (7) at which is located the photocathode (9) of an electron multiplier imaging device (8). The usual phosphor screen of the device (8) is replaced by a photo-diode array (12) which senses directly the electron beam images produced by the device (8).

ADVANTAGE - Compensates for high noise level in the photodiode array.

L13 ANSWER 21 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1984-245403 [40] WPIDS
DNN N1984-183593
TI IR image forming system - uses laser sources and heterodyne reception to form high resolution image of object.
DC P81 W04
IN DAURIA, L; HUIGNARD, J P; PUECH, C
PA (CSFC) THOMSON CSF
CYC 1
PI FR 2541786 A 19840831 (198440)* 17p
ADT FR 2541786 A FR 1983-3128 19830225
PRAI FR 1983-3128 19830225
AB FR 2541786 A UPAB: 19930925
The **imaging** system includes a first laser source (6) producing a beam of angular frequency Wo, while a second source produces a second beam so that a mixer may combine the first beam modulated by the object with the second beam. The combined beam is fed to a heterodyne **detector** (1) which produces an output signal which is fed to a **spectral** analyser (10.

Mixing is achieved by a semi-transparent lamina (3) with the modulated beam passing through, while the second beam is reflected in order to combine with it. The second beam is deflected by acousto-optic tanks using Bragg **diffraction** to achieve the required deflection of the beam.

ADVANTAGE - Has improved resolution and avoids small aperture **diffraction** problems.
4/9

L13 ANSWER 22 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1980-D4556C [16] WPIDS
TI Imaging system using optical **diffraction** spectrum - varies optical path length to adjust radius of imaging zone.
DC P81
IN HAENDLER, E; ROEDER, U
PA (STRA-N) GES STRAHLEN & UMWE
CYC 1
PI DE 2842696 A 19800410 (198016)*
PRAI DE 1978-2842696 19780930
AB DE 2842696 A UPAB: 19940205
The system allows the image of an object to be recorded via its optical **diffraction spectrum**, e.g. a Fraunhofer **diffraction** image, a power **spectrum**, a Fourier **spectrum** or a Wiener **spectrum**.

The **imaging** is effected over a selected annular zone using a multiple interference effect, with the radius of this zone adjusted by varying the length of the optical path between the object and the **detector** system.

This variation of the optical path may be effected by

piezoelectrically shifting a mirror arranged in the optical path.

Pref. the optical path for the interference beam is a whole multiple of the resonation wavelength of the laser source used to illuminate the object.